

# **MALHEUR QUEEN PLACER PROJECT REVISED ENVIRONMENTAL ASSESSMENT**

**Environmental Assessment OR-030-08-006**



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**BLM/OR/WA/AE-009/035-1792**

**ENVIRONMENTAL ASSESSMENT**  
**Bretz Mine Abandoned Mine Land Physical Hazard Remediation – Phase 1**

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# **REVISED ENVIRONMENTAL ASSESSMENT**

## **Malheur Queen Placer Project**

### **I. BACKGROUND INFORMATION**

#### **A. Introduction**

##### **1. Reasons for Revision to Environmental Assessment**

The original Malheur Queen Placer Project environmental assessment was completed in August 2005. The proponent of the project at that time was Ironside Mining Company, L.L.C. (Ironside). Ironside was unable to initiate the project by providing the required financial guarantee for reclamation as required by 43 CFR 3809.412. Eldorado Resources, L.L.C. (Eldorado) is the claimant of record for the unpatented mining claims in the project area and has a mining agreement with the owner of the patented lands in Quartz Gulch and near Malheur City. Eldorado initiated their own Plan of Operations in August 2007, however, Ironside maintained that their operations would begin once financial backing was obtained. BLM notified Ironside that the required financial guarantee must be received by July 31, 2008 or the Ironside Plan of Operations would be closed to allow progress on the Eldorado plan. BLM was notified by Ironside on August 1, 2008 that the financial guarantee would not be submitted. The Ironside case file is considered closed as of August 4, 2008.

This revised EA analyzes the environmental impacts of Eldorado's planned mining operation. The Eldorado mining plan is the same plan as submitted by Ironside with the exception of smaller, exploratory mining areas during the first three years of operation. This change to the plan does not affect the analysis completed in the EA as the ultimate project goal and surface disturbance remains the same.

##### **2. Project Overview**

The Malheur Queen Placer Project (Project) is located 0.5 miles southwest of Malheur City on the south slope of the divide between Willow Creek and Burnt River. The Project area is approximately 1.2 miles northwest of Malheur Reservoir, 5.5 miles south of the Burnt River and 47 road miles northwest of Vale in the Shasta Mining District in Malheur County, Oregon. Figure 1 illustrates the general location of the project area within T. 13 S., R. 41 E., Section 29, 30, 31, and 32, Willamette Meridian (33). The district has been mined periodically for gold since 1864 when gold was discovered in Shasta Gulch (Gregg, 1950). The Proposed Action is in close proximity to the historic Mormon Basin area and the mining camp of Eldorado.

The proposed project is detailed in a Plan of Operations (POO) submitted on February 7, 2005 with the revision submitted in August 2007 and finalized in March 2008. The associated surface facilities are located in Malheur County and the project area includes approximately 925 acres. The Project includes 24.94 acres of patented land owned by James A. Hurst under lease to Eldorado and approximately 69 acres of patented land owned by James A. Hurst that is not currently under lease to Eldorado. A 40-acre parcel of patented land located in the NE¼SW¼ of Section 31 is also included in the Project boundary. This parcel is not under lease to Eldorado.



The remaining 791 acres are unpatented mining claims held by Eldorado on public lands administered by the Bureau of Land Management, Vale District (BLM) (Figure 2). No state lands or U.S. Forest Service administered public lands exist within the project boundaries. The patented land under lease to Eldorado is identified as Malheur County Tax Lot No. 79, T13S, R41E, Sections 29 and 32, consisting of 24.94 acres. The private land is associated with Quartz Gulch (Figure 2). The patented land that is not under lease to Eldorado is not scheduled for surface disturbance within this POO.

# Malheur Queen Placer Project, Project Boundary and Land Status

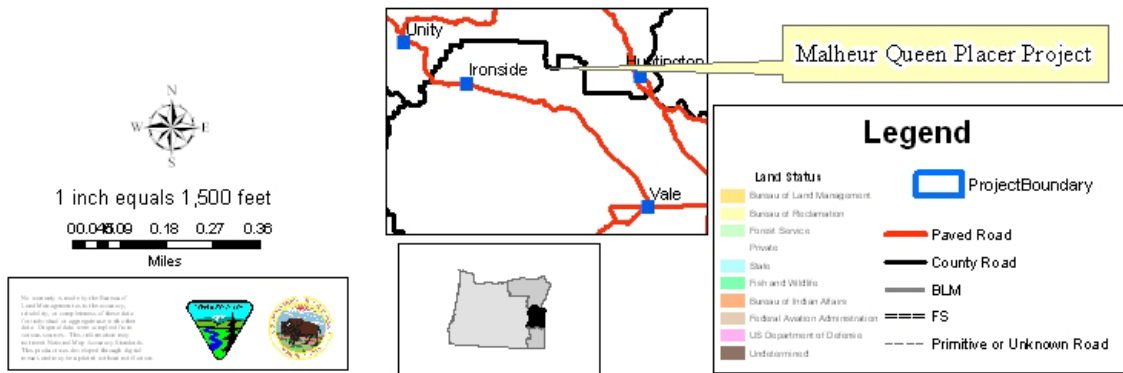
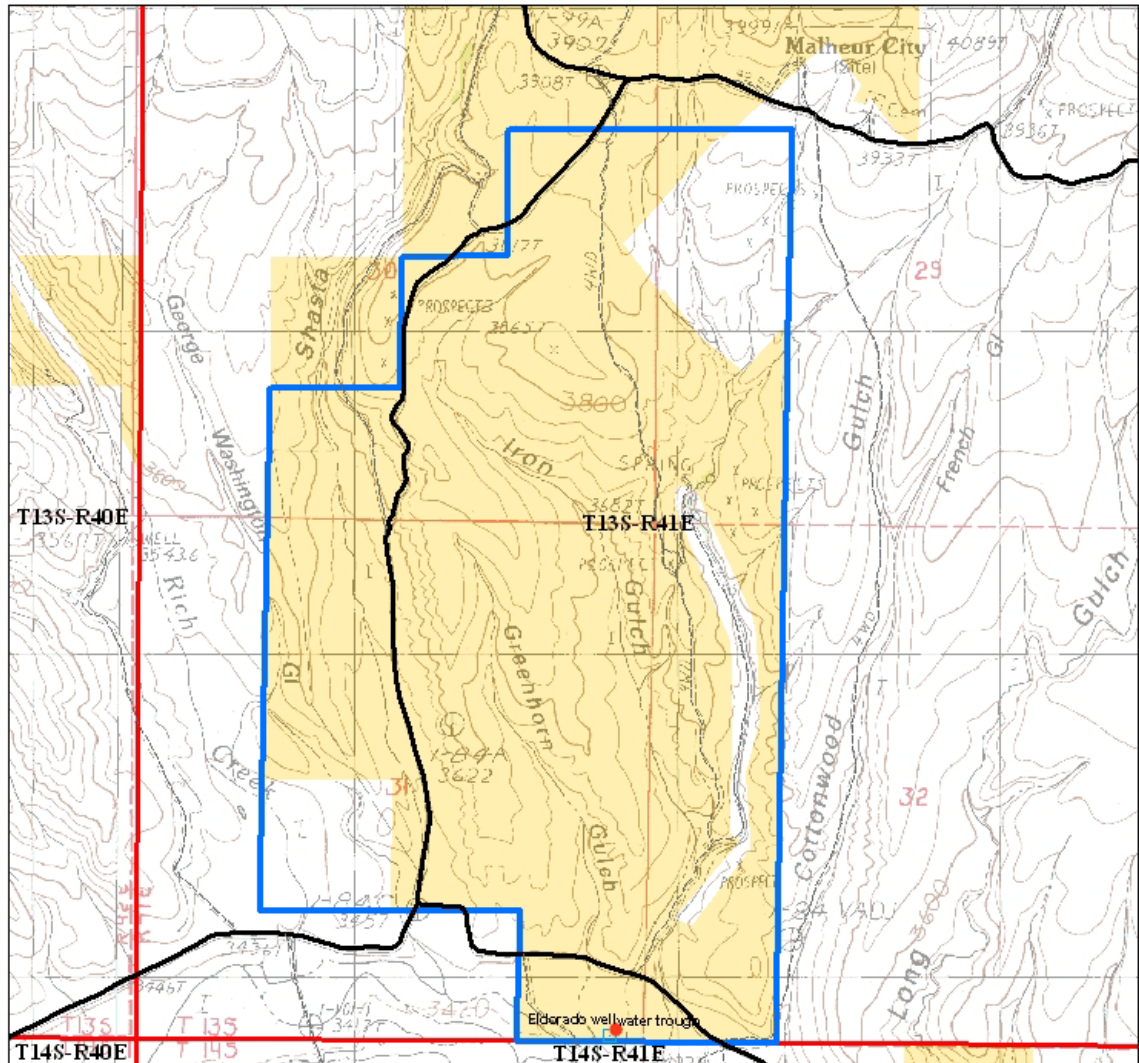


Figure 1: Malheur Queen Placer Project, Location and Overview



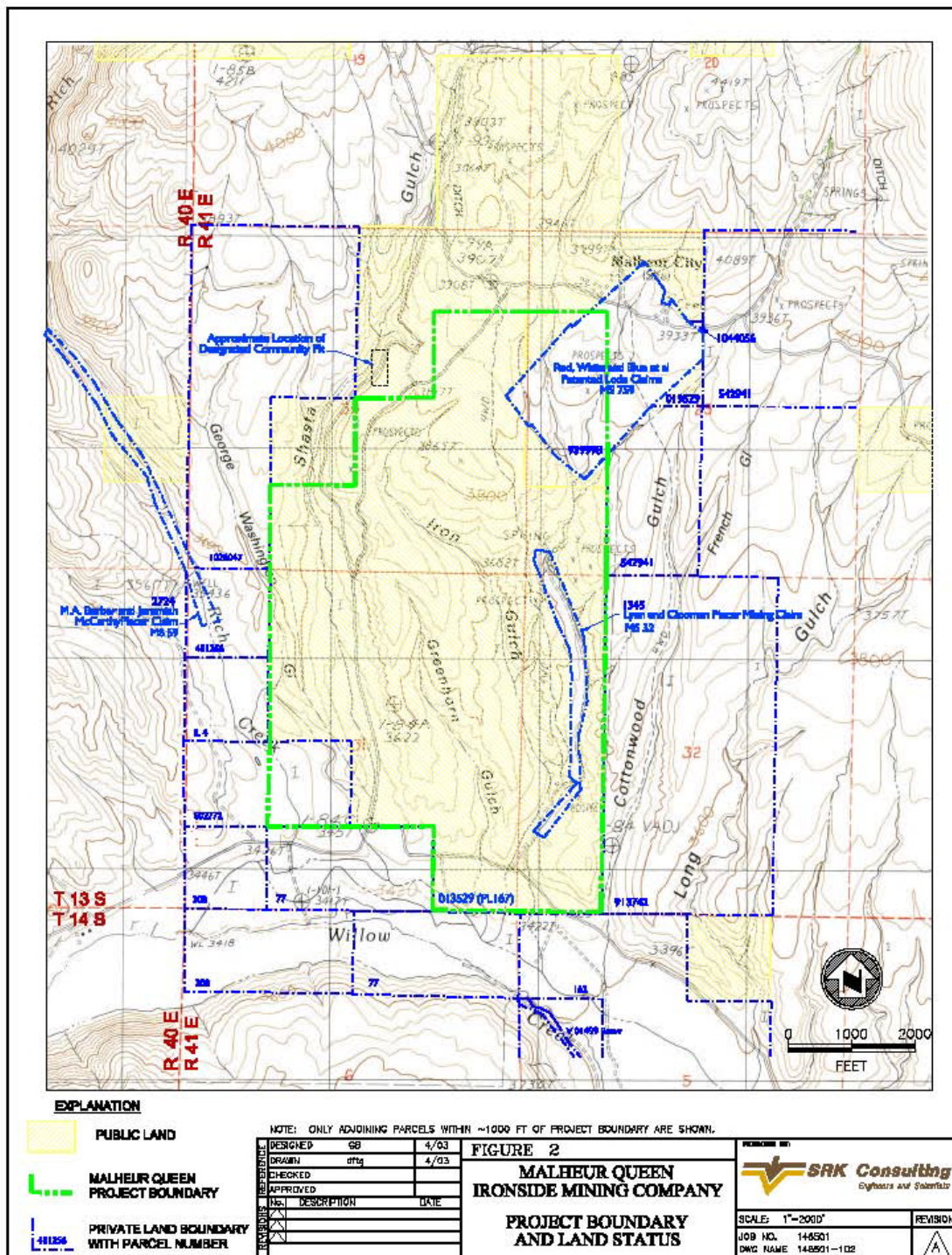


Figure 2: Malheur Queen Project Boundary and Land Status (from SRK POO)

## **B. Current Operations**

The existing operation consists of approximately 10 acres of surface disturbance including approximately 3 acres that have been approved under a current Oregon Department of Geology and Mineral Industries (DOGAMI) mining permit. The disturbance consists of dozer cuts and unlined sediment ponds. Eldorado has various pieces of placer mining equipment and the associated concentrate processing facility on the patented lands including spare parts, piping material and plastic sheeting. In addition, a camp trailer is located on site that is occupied by a caretaker. Test pits were excavated by Ironside during site evaluation in 1999 and all test pits on public lands and private lands were backfilled, but not re-vegetated.

Existing disturbance within the proposed Project area are primarily remnants of historic placer mining including approximately 206 acres associated with the placer mining and tailings in Quartz Gulch, Iron Gulch, Greenhorn Gulch, and Shasta Gulch. Historic mining disturbance is present in many locations within the POO area including isolated equipment disturbances and two-track vehicle paths. Alluvial ridges and slopes were placer mined using water from the Eldorado Ditch system and sluices were located on slopes immediately above the drainage bottoms. These areas have remained inactive during the tenure on the property by Eldorado and Ironside, with the exception of some test pits for mineral evaluation. The historic disturbance has been inactive for a period of sufficient length to allow vegetation to reestablish on the site. For the purposes of the POO and Reclamation Plan, all activities by Eldorado will be considered new disturbance subject to reclamation requirements.

Figures 3 and 4 display examples of the types of existing disturbance. Figure 5 is a 2005 photograph of the existing process plant area and Figure 6 is a photograph of recent reclamation earthwork.





Figure 3: View of Quartz Gulch looking southwest with placer cuts above the drainage and visible road cuts.



Figure 4: View of Shasta Gulch looking southwest with placer cut drainages visible above the gravel tailings mounds and irrigation canal.





Figure 5: Eldorado Resources' existing placer processing facility at the confluence of Quartz and Iron Gulches.



Figure 6: Recent reclamation earthwork at Eldorado Resources' existing placer processing facility at the confluence of Quartz and Iron Gulches.

A small perennial spring exists in Quartz Gulch and has been used for mining process water. The spring was developed as part of the historic placer mining operations but has become established riparian habitat for the Columbia spotted frog. The spring/riparian area is on public land and flows downstream to the private land leased to Ironside. The spring/riparian area is frequented by livestock and an enclosure fence installed by the private land owner is in disrepair. A damaged and unserviceable polyvinyl chloride (PVC) pipeline extends from the spring area to the process facility at the southern end of Quartz Gulch.

The on-site well located in the SW ¼ of Section 32 will supply potable water to the mine office, caretaker trailer, and, as necessary, to the clear water supply pond. The water was tested in 2004 and it meets the State drinking water standards for inorganic constituent levels and will become the source of potable water on site. The well was constructed on September 27, 1980 under the Oregon Water Resources Department Water Rights Division Permit # G-13389 for Water Right Application # G-14442 to Eldorado Resources L.L.C.

### **C. Purpose and Need**

The requirements of 43 C.F.R. 3809, Surface Management Regulations, the Mining Law of 1872 (30 U.S.C. §§ 22-24, 26-28, 29-30, 33-35, 37, 39-42 and 47, May 10, 1872, as amended 1875, 1880, 1921, 1925, 1958, 1960, and 1993.), the Federal Land Policy and Management Act of 1976, and the Mining and Minerals Policy Act of 1970 mandate that BLM will review and respond to a POO within 30 days of receipt (43 CFR 3809.411). As per §3809.411, BLM will review the received POO, determine if it is complete, respond to the proponent, and complete the environmental review required under National Environmental Policy Act (NEPA). The Secretary of the Interior is responsible for carrying out this policy in administering programs under the Secretary's authority. 30 U.S.C. § 21a. As per § 3809.1, the primary purpose of the subpart is to prevent unnecessary or undue degradation of public lands by operations authorized by the mining laws. Anyone intending to develop mineral resources on the public lands must prevent unnecessary or undue degradation of the land and reclaim disturbed areas. This subpart establishes procedures and standards to ensure that operators and mining claimants meet this responsibility

The Proposed Action is to mine and extract gold from placer gravels as described in a POO finalized by Eldorado on March 27, 2008.



## **D. Relationship to Land Use Plans**

### **1. Ownership**

The surface and mineral estates on 791 acres of the proposed POO are in federal ownership, and are administered by the BLM. The Proposed Action also will impact 23 acres of patented land with pre-existing land disturbance and facilities.

There are no pre-1955 mining claims, or oil and gas leases occurring on the subject lands. There is also no geothermal activity or leases that occur in the area.

### **2. Land Use Planning**

The Proposed Action described in Section II is in conformance with the Northern Malheur Management Framework Plan (NMMFP)(BLM, 1979). Although the action is not specifically addressed, Objective 2 for Energy and Mineral Resources states “provide opportunities for exploration and development of locatable mineral resources while protecting other sensitive resources”. Additionally, the Southeastern Oregon Resource Management Plan and Final Environmental Impact Statement (SEORMPFEIS), Energy and Mineral Resources, Objective 2, states that resource management will provide opportunities for exploration and development of locatable mineral resources while protecting other sensitive resources. The Proposed Action would adhere to the Best Management Practices identified in Appendix O of the SEORMPFEIS.

## **II. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

### **A. Proposed Action**

The Proposed Action would occur on the southern slope of the divide between Willow Creek and Burnt River. The Project area is approximately 1.2 miles northwest of Malheur Reservoir, 5.5 miles south of the Burnt River and 47 road miles northwest of Vale in the Shasta Mining District in Malheur County, Oregon. Figure 1 illustrates the general location of the project area within T. 13 S., R. 41 E., Section 29, 30, 31, and 32, Willamette Meridian (33).

Eldorado proposes to mine placer gravel-, sand-, and silt-sized material within and adjacent to two north-northwest-trending perennial stream channels and two intermittent stream channels. (see Figure 7). The Malheur Queen Placer Project would be a conventional gold placer operation whereby the gold-bearing gravels and tailings would be excavated, sized, and washed to extract gold particles for economic benefit. The sediment deposited in the bottom of each gulch by the historic mining (late 1800s) would be mined from sidewall to sidewall and re-processed through the placer plant. The gravel- and sand-sized particles of sub-economic value (tailings) would be returned into the mining pit following removal of the gold particulate. No chemical processing is involved in the mining operation.

Eldorado has proposed a three phase mining sequence. The first phase would consist of a progression of one-acre excavations to define the depth and focus of mineralization. Initial depth

of mining would be 40 feet. Concurrent reclamation would be completed as the mining progresses up Quartz Gulch. The second phase of mining would be similar to Phase 1 but would occur in three-acre increments to a depth of approximately 60 feet. The mining phases would process gravels at a rate of 50 to 200 cubic yards per day, respectively. Phase three, the primary focus of this NEPA analysis, would excavate 23-acre mining blocks to depths ranging from 40 to 60 feet in depth. A maximum of 3,200 cubic yards of gravels would be processed per day. This phased approach to the mining will allow the scale to be limited depending on the grade of the mineralized zones.

A standard track-type excavator would excavate the gold-bearing gravels and direct feed the material into the mobile placer plant. The placer plant would have two vibratory screens to wash and size the gravels. The smaller screen fraction would be pumped to four mineral centrifuges to extract the finer free gold particles. Mid-size gold particles would be extracted by use of two mineral jigs. All five millimeter (mm) minus material and plant process water would be pumped to the first (of three) tailings settling pond. The water from the first tailings settling pond would be transferred or decanted to the two subsequent ponds allowing clarification for reuse in the mining process. The placer mining water supply would be from ground water flow intercepted by trenches and any surface flows within the gulches to be mined. No chemicals would be added to the water throughout the entire process.

As the mining operation moves up the gulch, the tailings would be directly deposited back into the spent pit adjacent to the placer plant. Tailings settling ponds would be created as needed as the operation moves up the gulch. As the first pond is approaching maximum tailings content, the standing water would be decanted to the second pond and the tailings would be allowed to dry. This pond would then be graded, followed by growth media distribution. The growth media used would be the soil stockpiled in the berm used to create the pond. Mining is planned to proceed in specific stages allowing sequential mining, backfilling and water management. Contouring and topsoil distribution of the mined areas would occur immediately behind the placer plant as concurrent reclamation.

As one block of cells is nearing completion, the access road upgrading, pond construction, and growth media salvaging for the next block of cells would be initiated. This process would be repeated through the period of mining each year, March 1 through November 15, weather permitting.

The Project includes the following components:

- a) 400 cubic yard/hour (cy/hr) Placer Plant;
- b) Mining disturbance;
- c) Concentrate Processing Facility;
- d) Caretaker personnel housing;
- e) Mine Site Office/Training/Eating Facility;
- f) Main Office and Gold Processing Facility;
- g) Ancillary Facilities;
- h) Equipment Maintenance Building; and
- i) Project Area Rehabilitation.



Malheur Queen Placer Project Revised EA

short periods of closure. The operator estimates mining and processing would continue for 7 to 9 years.

The Proposed Action would be an expansion of the current notice level activity at the site and would disturb a total of 192 acres, including 10 acres that are estimated as current disturbance on private land. The Proposed Action would increase surface disturbance as a result of mining activities. The disturbance associated with existing Notice-level test pits would be incorporated by the proposed mining operations and reclaimed as mining progresses beyond the test pits.

The Proposed Action would include removal of Eldorado Resources Company's existing process plant, two settling ponds, house, water tank and current caretaker living quarters as seen in Figure 5, page 12.

**Table 1: Proposed Facilities and Disturbance Acreages**

<b>Facility</b>	<b>Total Acres</b>	<b>Public Lands (Acres)</b>	<b>Patented Lands (Acres)</b>
Placer Plant (mobile unit)	-	-	-
Equipment Maintenance Building	<b>1.0</b>	<b>0</b>	<b>1.0</b>
Concentrate Processing Facility			
Mine Office/Training/Eating Facility/Caretaker Housing	<b>1.68</b>	<b>1.68</b>	<b>0</b>
Main Office and Gold Processing Facility <sup>1</sup>	-	-	-
Ancillary Facilities	<b>4.72</b>	<b>2.52</b>	<b>2.2</b>
Mining Disturbance (gulches)	<b>164</b>	<b>144</b>	<b>20</b>
Mining Disturbance (benches)	<b>20</b>	<b>20</b>	<b>0</b>
<b>Total</b>	<b>191.4</b>	<b>168.2</b>	<b>23.2</b>

<sup>1</sup>This facility would be located in Vale, Oregon in an existing building. No surface disturbance is associated with this facility.

Access to the proposed project site would be via Oregon State Highway 26, 38 miles northwest of Vale, Oregon to the Indian Creek Road. The project area is then 6.4 miles to the Willow Creek Road and then an additional 2.5 miles to the Project area as shown on Figure 6. No new access would be required.

## 1. Mining and Placer Equipment

The gravel deposits in the targeted gulches would be mined by using a front-end loader, a Caterpillar D8R dozer, and a Caterpillar 345 B excavator. The placer plant would be a mobile unit consisting of two large vibrating screen decks, two slurry pumps, three conveyor belts, and four 38-inch Hy-G Mineral Concentrators all mounted on a track-mounted chassis consisting of two floor levels. The placer plant would be capable of processing gravel- and sand-sized alluvial material at a rate of 400 cubic yard/hour. All components would be standard commercial items to provide for good part and factory support. The mobile chassis would need to be custom built to contain the specific components in one compact mobile unit. No disturbance acreage is associated with this mobile plant, other than the mining disturbance.

## 2. Buildings and Ancillary Facilities

The equipment maintenance building would be a semi-portable, light-weight steel framework covered with heavy-weight fabric material. The floor of the building would be compacted earth and all equipment lubrication areas would be sealed with impervious material to prevent contamination of the ground. The building would be used for minor repairs and general preventive maintenance of all mobile mine site equipment. In addition to providing a dry work area, the building would also be used for storage of parts, mechanic tools, lubricants, etc. One portable toilet would be installed near this building. Sewage would be contained and removed from the site by a local septic service.

A storm water diversion ditch would be constructed up-gradient of the equipment maintenance building to prevent storm water from entering the site. This ditch would be one-foot wide, one-foot deep and 150 feet long. The building would be approximately 100 x 50 feet, with associated disturbance of 0.2 acres, including the storm water diversion ditch. The building and storm water diversion ditch would be located on patented lands.

The concentrate processing facility would be isolated from the other facilities for security purposes. The building is to be used for initial gold concentrate processing to reduce the large amount of main plant concentrate to approximately 10 to 15 gallons of super concentrate. The building would consist of a used, ocean container, approximately 45 x 8 feet and would be fenced with a secure cyclone fence to limit access. The facility would have a separate clean water supply via a buried pipeline from the existing water well, a 9½-inch Hy-G Concentrator, some basic lab equipment, and supplies. The building and associated fence would be located on patented lands and disturb approximately 0.07 acres. The total area of disturbance associated with the equipment maintenance building and the concentrate processing facility for buildings and incidental disturbance around the buildings would account for 1.0 acre of the patented land.

The mine site office/training/eating facility (mine office) would be a standard construction site trailer approximately 10 x 70 feet. This facility would be set up on blocks on a compacted soil surface and skirted. The trailer would be divided into office space, a small training room with a blackboard and video/TV, a bathroom/wash room, and a small kitchen/eating room. Potable water would be supplied to the site by a local vendor. Non-potable water would be supplied by



the existing well at this site (see Figure 7), pending water testing. If the well water proves to be potable, then the well would be used to supply all water at this facility. A septic system would be installed to handle septic from this facility. The septic system would be located down-gradient of the well and would be installed by a licensed contractor as per County Health Department.

The facility would also include parking area for the vans that transport workers to the site, for visitors, and for on-site vehicles. A storm water diversion ditch would be constructed up-gradient of the mine office building to divert storm water run-off from the site. This ditch would be one-foot wide, one-foot deep and 100 feet long. The office and parking area would be located on public lands in the SW $\frac{1}{4}$  Section 32 and the SE $\frac{1}{4}$  of Section 31, and disturb approximately 0.07 acres.

Power for the mine office facility would be provided by the nearby overhead transmission line that extends along the county road from the ranch approximately 1 $\frac{1}{4}$  miles west of the proposed office site. Eldorado would arrange for the necessary power connection, including power pole(s) and line to the office facilities. The power drop made from this power line would either consist of two smaller power poles to the caretaker and office facilities, or a buried power line to the two facilities. This power line would also supply power to the pump (3 hp) at the well site.

A small trailer would be installed near the mine site office/training/eating facility to house the caretaker. The caretaker would be responsible for the site when operations are closed down for the winter months and whenever shift workers are not present. The trailer is anticipated to be 30 x 10 feet. A small storage shed may be associated with the trailer. The trailer would be connected to the septic system and the well water system. Power would also be supplied to this trailer.

In addition to the building and storm water diversion ditch and caretaker facility, incidental disturbance around the buildings would bring the total disturbance for the mine office to 1.68 acres of public land disturbance.

Ancillary facilities include generators for power, power lines, fuel storage areas, road improvements, water supply ponds, water supply lines, and lay-down yard. Two generators would be used on site to supply power for the placer plant. The two generators would be mounted on a mobile unit with a fuel tank. Each generator would be capable of producing 200 KW and would provide power for the mobile processing plant. A third generator, with 40 KW capacity, would be installed at the concentrate processing facility. This generator would supply power for the gold processing as well as to the equipment maintenance facility. Power lines from the generator to the buildings would be required. Disturbance associated with the 40 KW generator is included in the disturbance associated with the concentrate processing facility. The power lines would require approximately 0.01 acres of disturbance.

Fuel storage would include one, 5,000-gallon above ground tank for diesel to supply the excavator, placer plant, generators, D8R dozer, and 980 loader. The storage tank would be located on patented lands. The fuel storage area would consist of compacted soils overlain by an HDPE liner, and a berm sufficient to contain 110 percent of the volume of stored fuels in addition to precipitation from the 100-year, 24-hour storm event. A storm water diversion ditch would be

constructed up-gradient of the fuel storage area to prevent storm water run-off from entering the site. The fuel storage area would disturb approximately 0.34 acres.

One propane tank would be located near the mine site office and caretaker trailer (Figure 7). This 500-gallon tank would provide fuel for heating the buildings and kitchen use. A second 500-gallon propane tank would be located near the gold-processing and equipment maintenance buildings that would provide fuel for heating. Propane supply lines would be located underground from the tanks to the various buildings. The propane tanks would be located within the disturbance footprint for the various building sites.

### 3. Off-Site Facilities

The main office and gold processing facility would be located in Vale, Oregon, approximately 47 miles southeast of the Malheur Queen Placer Project. The main office would include office space for staff, files, and a separate room to be used for final gold cleaning. The gold cleaning room would have lab screens, gold finishing table, drying oven, precision weighing scale, and a safe for gold storage until shipment. This facility would serve as a contact point for vendors, government agencies, mail and package receiving, employee contact, and radio contact with the mine site. Eldorado would lease an existing building for this purpose and no surface disturbance is associated with this facility.

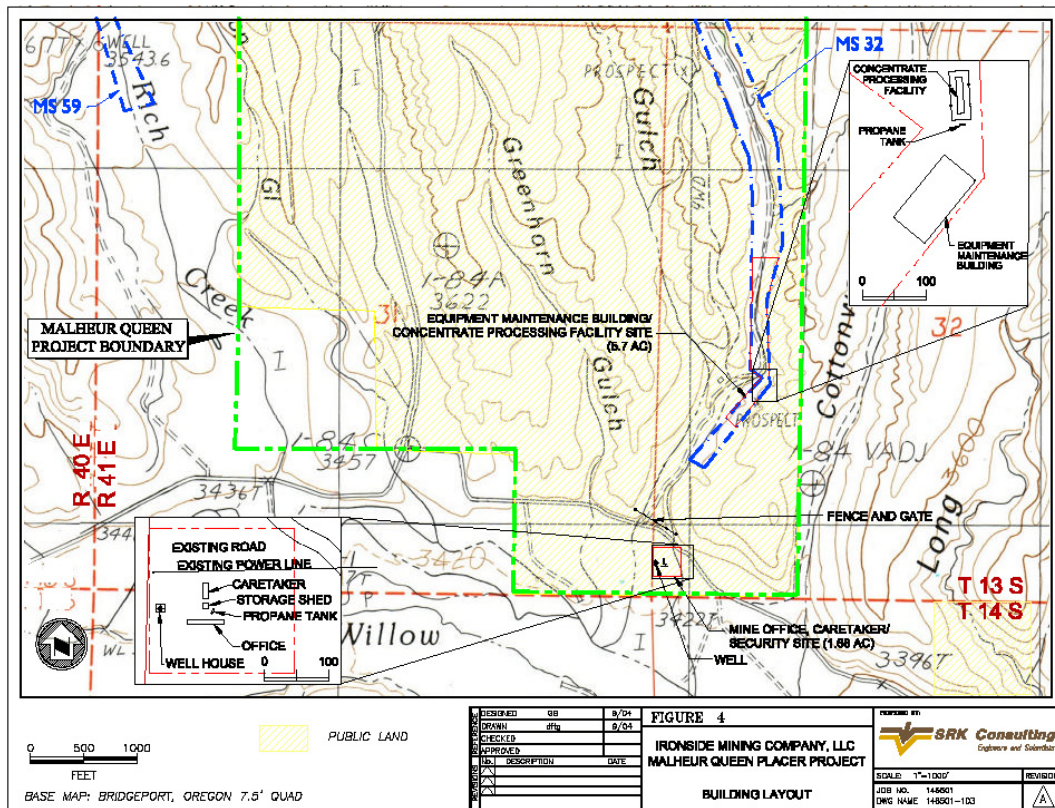


Figure 8: Malheur Queen Placer Project building and facility lay-out(from SRK POO).

#### 4. Water Supply

Water supplies would be from new clear water supply ponds on public lands (shown as Pond # 1, #2, and #3 in Figures 9 and 10), and from the on-site water well. Mining in riparian areas would be avoided, where feasible, and would be discussed with BLM as mining progresses.

The clear water supply pond would be approximately 40 x 40 feet (0.05 acres). Water from the dewatering trenches constructed during mining would be used to supply this pond. Clear water from this supply pond would be used to supply the gold-processing building. Excess water would be sent to Pond #3.

Water for Ponds # 1, # 2, and # 3 would be supplied from the dewatering trenches and discharge water from the gold-processing building. Water from the on-site water well would only be used if necessary to maintain production. Clarified water from Pond #3 would be used to supply the placer plant. All water from the placer plant is recycled back through Ponds 1-3. The potential exists for use of liners for the settling ponds to allow for sufficient water recovery (to be determined by percolation tests). If liners are necessary, they would be black, 30 millimeter, High Density Polyethylene (HDPE) material with welded seams, or pre-made pond liners of a predetermined size and shape.

Water supply and distribution lines from the clear water supply pond and on-site well would be above ground lines drained at the end of each season. Water and slurry lines to and from the placer plant, water lines from the dewatering trenches, and the slurry tails line from the gold-processing building would be above ground due to the mobile nature of the placer plant and the frequent pipeline maintenance requirements. All water and slurry lines would be fused HDPE pipelines for toughness and durability. The surface lines would be blown free of water/slurry before operations shut down for the winter.

The on-site well located on Public land in the SW ¼ of Section 32 would supply potable water to the mine office, caretaker trailer, and, as necessary, to the clear water supply pond. The water was tested in 2004 and it meets the State drinking water standards for inorganic constituent levels and would become the source of potable water on site. The well was constructed on September 27, 1980 under the Oregon Water Resources Department Water Rights Division Permit # G-13389 for Water Right Application # G-14442 to Eldorado Resources LLC. The maximum permitted rate of use is 0.17 cubic feet per second (cfs) for the purpose of mining.

The well equipment would include well casing and pump, 50-gallon pressure tank, 2,500-gallon storage tank, water system pressure pump, electric switch gear. The well would be enclosed in a small wood building to protect the pump from the elements. The building would be a 2 x 4 wood structure with OSB board walls, fiberglass insulation, painted exterior, with asphalt shingle roof. A light and electric heater would be installed. A black, polyethylene, 2,500-gallon storage tank, eight feet in diameter and 7.5 feet in height would be installed near the well. It would include inlet/outlet/overflow fittings. The tank and well building would be placed on a concrete pad 13 feet wide by 17 feet long and five inches thick.

A lay-down yard for supplies and equipment delivered to the site would be located on patented land near the equipment maintenance building. The lay-down yard would be approximately 100 x 100 feet or about 0.25 acres. This site would also serve for equipment storage during periods of non-operation and would be enclosed by a cyclone fence.

One portable toilet would remain near the active mining operation. Sewage would be contained and removed from the site by a local septic service.

Total disturbance associated with the ancillary facilities would be 4.72 acres. Most of this acreage would be located near the equipment maintenance building and mine office site (see Figure 7).

## 5. Mining Disturbance

Mining would occur using a front-end loader, a Caterpillar D8R dozer, and a Caterpillar 345 B excavator during suitable weather periods, generally from March 1 to November 15 each year. The Project Area would be laid out in a series of blocks, each block representing a field season of work (See Figures 8 through 10). The blocks would be approximately 1,400 x 800 feet (about 23 acres). A block would consist of approximately six cells (Figure 8). The initial starting block would also include tailings (settling) ponds, temporary storage for the tailings (washed gravels), and topsoil (growth medium) stockpile. A livestock control fence would be constructed around the perimeter of the block to prevent livestock from entering the active mining area.

Growth media from all the cells would be salvaged and stockpiled prior to excavation. The cells would be mined sequentially. The tailings from the first cell would be stockpiled in the temporary tailings storage area. At the completion of Cell #1 excavation, Cell#2 would be mined. The tailings from this cell would be directly deposited into Cell#1 as backfill. At the completion of Cell #2 excavation, Cell #3 would be mined. Tailings from this cell would be directly deposited into Cell#2. Cell #1 would be re-graded and growth media distributed while Cell #3 is being excavated. This cycle would be repeated until the last cell is mined (Figures 9 and 10). The tailings from Cell #1 would be used to backfill Cell #6.

The disturbance associated with the mining operation is anticipated to be approximately 184 acres (21 percent of the project area) over the life of the mine. However, mining disturbance (i.e., excluding the disturbance associated with the buildings and ancillary facilities) during a given mining season is likely to be less than 25 acres (including road improvements). Reclamation is conducted as part of the mining process with regard to backfilling. The processed, excavated material is placed back into the preceding pit (Figures 9 and 10). The last pit is refilled with the material from the first pit. The topsoil/growth media is then distributed, followed by seeding. The settling ponds remain active until the end of the mining season or until the mining operation moves up-gradient to the location of the next settling pond. As settling ponds are filled and new ones are developed up gradient, the former settling ponds would be covered with the original sand/gravel that was excavated to form the ponds, followed by growth media distribution and seeding. At the end of each mining season, 80-90 percent of all earthwork would be completed. Growth media distribution and seeding would have been completed for a large majority of the



area disturbed during the mining season. The new ponds, the last cell mined, and roadways would not be reclaimed until the following mining season.

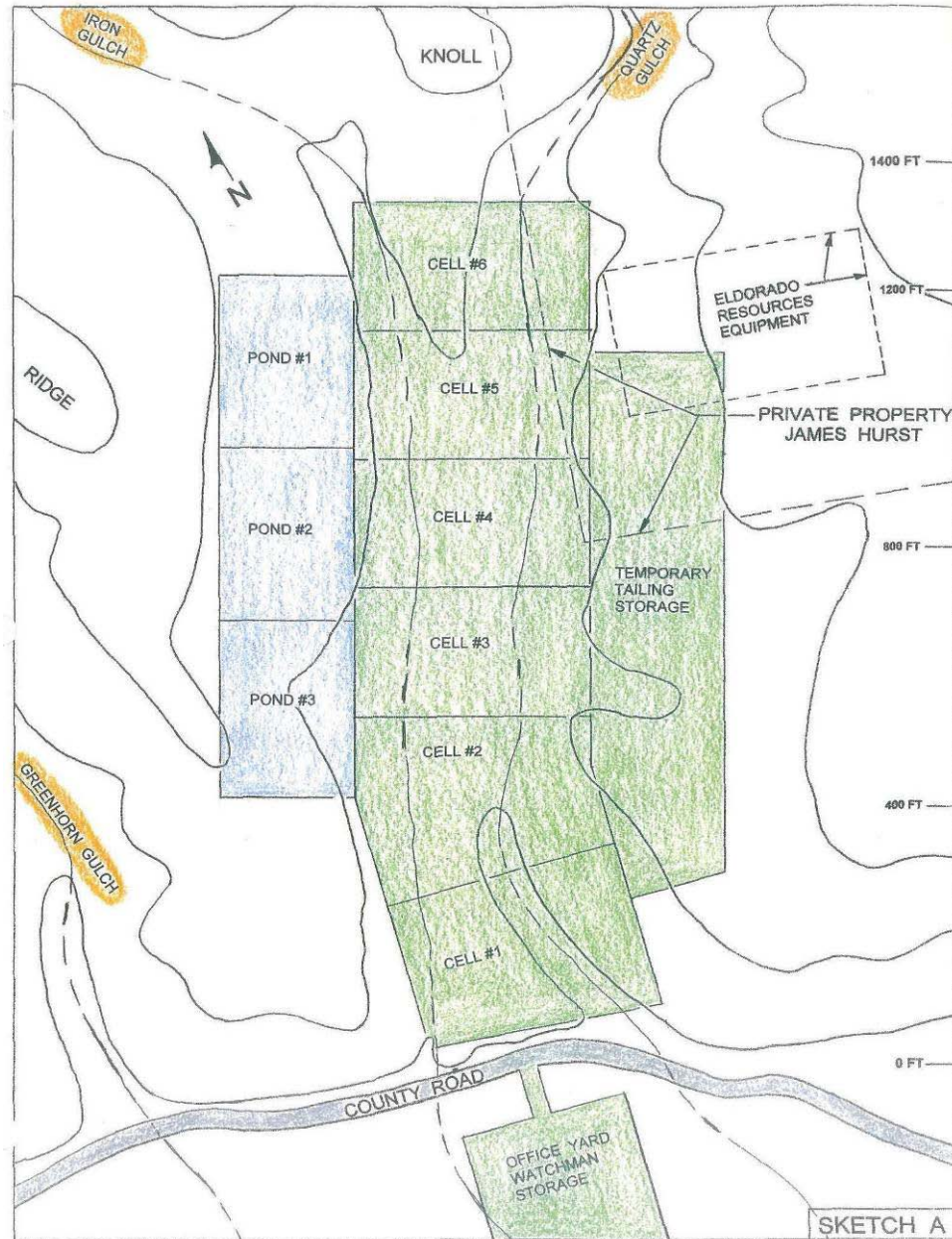


Figure 9: Stage 1 mining blocks representing sequential mining activity during operating season(from SRK POO).





Figure 10: Stages 1-3 mining blocks representing sequential mining activity during operating season(from SRK POO).



Figure 11: Stages 4-6 mining blocks representing sequential mining activity during operating season with concurrent reclamation(from SRK POO).

In addition to the mining of the gravels in the gulches, Eldorado also proposes to mine gravels on the western slope of Iron Gulch. Test trenches along the benches of Iron Gulch have identified gold-bearing gravels (Figure 6). The exact acreage to be mined has not been determined, but the disturbance associated with this activity would not exceed 20 acres. Growth media would be stripped and stockpiled on site prior to excavation. The gravels would be excavated and hauled to the mobile placer plant for processing. Washed gravels would be returned to the site for backfilling prior to redistribution of the growth media. Temporary road spurs from the upland sites to the placer plant would be constructed to facilitate haulage. The roads would be treated with water or dust suppressant to control fugitive dust. These roads would be reclaimed at the end of each mining season. In addition to the disturbance associated with the mining of these gravels, sample trenches would be created to determine the location of other gold-bearing gravels. These trenches would be backfilled immediately after the samples are collected and seeded during the fall seeding operations. The disturbance associated with these sample trenches is included in the 20 acres associated with the upland mining. Eldorado would conduct the sampling at the beginning of the mining season adjacent to the gulch area to be mined during the current season to allow efficient mining by limiting the haul distances. The areas sampled and proposed for mining would be depicted on maps to be submitted to BLM and DOGAMI at the beginning of each mining season.

## 6. Water/Sediment Management

The primary source of water for the Malheur Queen Placer Project would be subsurface groundwater flow within the existing tailings from historic mining. The gulches filled with the historic tailings (gravels) provide subsurface flow of meteoric water that has infiltrated the alluvium. The subsurface flow would be gathered in dewatering ditch up gradient of each area to be mined. The water collected in the ditch would be pumped to the clear water supply pond and used subsequently in either the placer plant or at the concentrate processing facility.

Each block to be mined would also have groundwater interception trenches (dewatering trenches) approximately 0.2 acres in size. The trenches would be excavated to bedrock or to an elevation approximately 10 feet below the anticipated depth of the pit bottoms. The purpose of the trenches would be to intercept groundwater up-gradient of the block being mined. The water intercepted by the ditches would be used to supply the clean water supply pond and subsequently, the placer plant operation. Use of this water would limit the amount of water that would be needed from the well. Following processing and delivery of the slurry to the tailings ponds, the water would infiltrate into the same gulch and subsurface flow from which it derived.

The tailings ponds would be used to contain the water from the placer plant and to allow sediment to settle out of the slurry. The water from the process would be allowed to infiltrate through the tailings ponds into the groundwater system. The tailings ponds would vary in size but each pond would generally not exceed 275 x 200 feet (1.3 acres) in size and approximately 10 feet in depth. The tailings ponds would be excavated as needed, and generally, only three tailings ponds would be active at any given time. The size of a given pond would depend on site factors, such as topography and percolation rates. Material excavated to create the tailings ponds (Ponds #1, #2, and #3 in Figures 8 through 10) would be used to create and form the berms around the ponds and would later be used during reclamation (backfill) of the spent ponds. As fine material slurry (i.e.,



minus 200 mesh) is pumped into the ponds from the placer plant, the fine particles would settle, partially backfilling the ponds #1 and #2. Pond #1 would be the initial settling pond. At the fine material settles in Pond #1, the clarified water would be directed to Pond #2 for further clarification (settling of suspended particles). The overflow from this pond would be directed to Pond #3. By the time the water has reached the lower end of Pond #3, the water should be sufficiently clarified for re-circulating and use in the placer plant process.

When the block has been mined the ponds would be ripped, backfilled, contoured, graded, and covered with growth media. The temporary tailing storage and topsoil stockpile areas shown in Figures 9 and 10 would also be ripped and graded as seedbed preparation.

Water used at both the placer plant and the concentrate processing facility would be recycled to the tailings settling pond. As the tails settle out of the water, the water would be transferred back to the clear water supply pond for reuse in the mining process.

Replacement water, if necessary, would be obtained from the existing water well within the Project Area.

Water distribution lines from the clear water pond to the placer plant and the concentrate processing facility and from the placer plant and concentrate processing facility to the tailings settling ponds would be HDPE pipe placed above ground. Water lines from the well for replacement water would not be constructed and water would be hauled by truck to the clear water supply pond as this pond location would change during the mining process.

Water quality is expected to be maintained by allowing the solids to settle into the tailings settling ponds before the water is reused. Seepage from the settling ponds into the gulch is anticipated, returning the water to the same subsurface flow system from which it was obtained.

## 7. Access/Roads

The main access road to the Malheur Queen Placer Project would be the Willow Creek Road. Additional access is from Malheur City via an unimproved 4-wheel drive road. Vehicles anticipated to be used include multi-passenger vans to transport mining crews, pickup trucks, service trucks, and fuel trucks (diesel and propane), all of which currently use the County Road. Malheur County Road Department would maintain the primary access roads to the Project Area.

The existing two-track road that services the Quartz and Iron Gulches lands from the county road (Willow Creek Road) would need to be improved to allow the placer plant to be moved around the Project Area. The roads would need to be widened to approximately 30 feet and graded to less than 10 percent grade. Approximately four (4) acres would be associated with the road improvements. Soil removed for road improvement work would be stockpiled as road berm for later use during reclamation. Where cut and fill road construction is necessary, the cut material would be used for fill, or stockpiled on site for later use during reclamation. The roads would be maintained until no longer needed for mining, reclamation, or monitoring and, then, re-contoured and reclaimed.

## 8. Existing Disturbances

Existing disturbance areas within the proposed Project were disturbed by historic placer mining include approximately 206 acres associated with the placer mining and tailings in Quartz Gulch, Iron Gulch, Greenhorn Gulch, and Shasta Gulch. These areas have remained inactive during the tenure on the property by Eldorado and Ironside, with the exception of some test pits for mineral evaluation. The historic disturbance has been inactive for a period of sufficient length to allow vegetation to reestablish on the site. For the purposes of this POO and Reclamation Plan, all activities by Eldorado would be considered new disturbance subject to reclamation requirements.

Ironside conducted mineral evaluation of the area during 1999. Eldorado conducted exploration activities in 2007 by trenching in two previous exploration sites as part of Notice OR-64058. The test pits on public land have been reclaimed.

Only one surface water body occurs on the Project Area. A pond located in Quartz Gulch occurs within the historic tailings. The water source for this pond may either be surface expression of subsurface seepage within the tailings, or a spring source that surfaces at this location. Due to the presence of tailings within the entire length of the gulch, the surface expression of subsurface flow or spring flow is an indication of some restrictive layer within the tailings.

## 9. Spill Prevention, Containment, and Countermeasures

No hazardous and/or toxic materials are used within the mining process. Fuel, oil, lubricants, used oil, and antifreeze would be located in the fuel storage area and the equipment maintenance building. The diesel fuel storage tank would be installed on compacted earth over an HDPE liner. The storage area would be enclosed by an earthen berm of sufficient height to contain 110 percent of the stored fuel volume. Spills would be reported to appropriate state and federal agencies. Contaminated soils would be removed and placed in an approved disposal site. The following Federal and State Regulations would be followed pertaining to spills:

Resource Conservation and Recovery Act (RCRA)  
Toxic Substances Control Act (TSCA)  
Hazardous Materials Transportation Act (HMTA)  
Clean Water Act (CWA)  
Comprehensive Environmental Response  
Compensation and Liability Act (CERCLA)  
Superfund Amendment Reauthorization Act  
(SARA) Title 3  
Oregon Spill Reporting Oregon Administrative Rule (OAR) 340-108

The primary objective of the Spill Prevention, Containment, and Countermeasures (SPCC) plan is to prevent oil and oil-related products from spilling and affecting the environment, specifically the water, on the premises that make up the Malheur Queen Placer Project site. This plan also identifies potential sources of spills; establishes measures of prevention; and defines control, cleanup, and reporting procedures, including instructions on what to do in the event of a spill.



Preparation of the SPCC plan is pursuant to 40 CFR 112, *Oil Pollution Prevention*, which “establishes procedures, methods, and equipment, and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable water of the United States or adjoining shorelines.”(40 CFR 112, §112.1 (a))

The regulations referenced above are applicable to onshore non-transportation-related facilities, such as the Malheur Queen Placer Project, where containers of oil (including gasoline, diesel, motor oil, etc.) hold more than 660 gallons in a single container, 1,320 gallons in multiple aboveground containers, or over 42,000 gallons of underground storage. Under any or all of these circumstances an SPCC Plan must be prepared, implemented and kept on file (40 CFR § 112.3 (e)).

**Oil** is considered the generic term for hydrocarbons and includes oil of any kind in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged soil (40 CFR 112 § 112.2).

A **reportable or “spill event”** is a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities, as defined at 40 CFR part 110 (40 CFR 112 §112.2). Additionally, Oregon State regulations define reportable quantities in OAR 340-108-0010.

A **discharge** includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, or dumping, but excludes discharges in compliance with a permit under Section 402 of the CWA (40 CFR 112 §112.2).

Prevention measures, containment and drainage control design, inspection procedures, and disposal methods for cleanup materials, gravel, soil, and debris have all been planned to comply with the requirements defined in 40 CFR 112, §112.7. Prevention measures at the Malheur Queen Placer Project include proper equipment and containment designs, periodic inspection, tank loading and unloading procedures, and maintenance procedures.

Tanks in the fuel storage area would be located within earthen containment structures (berms). The fuel storage containment structure would have a capacity of 5,500 gallons which is sufficient to contain the entire volume of all planned storage tanks plus ten percent. The fuel storage area would be designed so that no spilled material would leave the facility. The fuel storage area would be compacted earth overlain by an HDPE liner.

Fuel vendor personnel would be required to remain with the transport vehicle and observe tank filling at all times and remain attentive to tank level indicators to prevent tank overfills. Personnel engaged in fuel unloading and dispensing activities are required to remain with the vehicle until completion. Personnel are responsible for ensuring that these activities are conducted in a safe and environmentally sound manner. Minor spills that occur would be cleaned up with oil-absorbent materials. If a major spill occurs, sump pumps would be used to evacuate spilled material into a holding tank or back into secondary containment.

Tanks would be visually inspected weekly. Visual inspections are conducted with respect to the following:

1. Tank fill valves are to be in the closed position when not in use.
2. All valves would be inspected for signs of leakage or deterioration.
3. Inlet and outlet piping, as well as tank flanges are to be checked for leakage and to insure that adequate support is provided.
4. Level indicators and discharge control equipment would be checked to see that all are operating properly.
5. The tank shell surfaces are to be visually inspected for areas of rust or other signs of deterioration. Particular attention should be paid to areas with peeling paint (or other coating), welds, and seams.
6. The ground surface in the loading area is to be checked for obvious signs of leakage or spills, specifically stained or visibly damp soils.

Annual inspections would include inspection of the tank shell, welds, rivets and bolts, foundations, and supports. Aboveground valves and pipelines would be examined for the general condition of flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, and condition of metal surfaces.

Project employees would be trained in elements of this SPCC plan to minimize the number of human errors that can cause spills. Training occurs annually, as a portion of the site wide Mine Safety and Health Act annual refresher training and records of employee attendance would be maintained.

Oil spill prevention measures would be designed to minimize spills from occurring; however, occasional releases may occur. Small leaks and spills, confined to small areas would be cleaned up as part of ordinary operating procedure. In situations where a large leak occurs and remains confined to the Project property, cleanup would proceed according to the direct countermeasures outlined below. These countermeasures have been designed to mitigate the possibility of oil reaching a waterway. Employees would undertake these countermeasures immediately when there is any danger of oil entering any waterway and/or in the case of any large oil release. In the case of a small spill, direct countermeasures include stopping the material release by plugging the leak source and/or closing the valve. Employees would make sure the spill is totally confined.

Direct countermeasures include taking the necessary action to terminate the source of the flow of petroleum product should a spill of significant size occur. Dig a trench or construct an earthen berm, whatever is necessary, to confine the area of the spill or to stop it from entering a waterway or leaving the property boundary. Never clear away spills by applying water. Use the most appropriate oil-absorbent materials to prevent petroleum products from flowing into watercourses or off the mine site property boundaries. Oil absorbent materials may include floor sweep, absorbent mats, socks, booms or any other appropriate cleanup material. Any other actions, such as placing absorbent materials around the spill to minimize environmental damage, must be taken.

When the direct countermeasures described above have been implemented, notification and reporting procedures would be followed. Cleanup must be initiated immediately following containment of the spill.

It is extremely important that any oil be prevented from reaching streams, drainage ditches, septic systems, property boundaries or any other place where water is or could potentially flow. Project personnel would exercise every available option to stop and confine the spill. Additionally, personnel are trained to anticipate and prevent water from flowing into a spill area. Water can be diverted around the spill area constructing earthen berms and/or ditches.

With the release of a small quantity spill, cleanup operations would be conducted by Project employees under the direction of the Mine Superintendent. Should a significant spill occur, the Mine Superintendent or Second Shift Foreman must be notified. They would decide whether to notify the General Manager. The Mine Superintendent or Second Shift Foreman are “on call” 24 hours a day, including weekends, to assist employees in reporting and acting on environmental issues in a timely manner. If available operations personnel are unable to confine the spill, the General Manager will call in outside contractors to assist with the effort.

Spill containment and cleanup equipment available on the site include the following:

- 3 spill kits;
- Front-end loader;
- CAT D8R dozer;
- 345 B excavator; and
- Various size diaphragm pumps.

For spills on gravel or soil, it may be possible to absorb free liquid with absorbent materials prior to excavating and removing the contaminated material. Spills occurring on solid surfaces may be collected with the use of absorbent materials and then cleaned thoroughly with a non-hazardous solvent. Sufficient quantities of absorbent materials and other cleanup equipment would be maintained at the equipment maintenance building on the mine site.

If small quantities of water exist with the spilled petroleum, the fluids may be absorbed in sawdust or sand and disposed of per the General Manager’s directions. The fluid may also be absorbed with the use of commercial products such as mats, socks or booms, and placed into the dumpster provided no free liquid can drain from the absorbent material. If the spill is of significant size and/or duration, special cleanup efforts such as those provided by environmental contractors may be deemed necessary.

When cleaning up diesel or lubricating oil, all spent cleanup material such as rags, absorbents, etc., must be disposed of in accordance with approved procedures. Only pre-approved locations or practices would be used to dispose of cleanup materials. These pre-approved locations or practices would be identified prior to the initiation of mining.

A reportable spill is defined as any noticeable amount of material released outside of containment. All spills must be immediately reported through the normal chain of command and reported to the Mine Superintendent or Second Shift Foreman as soon as possible. Proper reporting of oil spills is critical and must be done carefully, accurately, and in a timely manner.

Records and reports of spills and releases shall be maintained for a period of five years by the General Manager, and would be made available for inspection upon request by EPA or State agency personnel.

The Mine Superintendent or designated representative would execute all reporting to the agencies under the direction of the General Manager.

#### 10. Quality Assurance Plan

The Malheur Queen Placer Project does not entail any construction of facilities such as heap leach pads, process ponds, tailings ponds for crushed ore, etc. Therefore, quality assurance would be provided through contracting with reputable firms for preparing the building sites, constructing the fuel tank storage area, installing the fuel tanks (diesel and propane), installing the septic system, and constructing/set up of the buildings. Quality assurance would also be provided by complying with the terms and conditions of permits required for operation of the mining project.

#### 11. Schedule of Operations

Based on the initial material testing, the Malheur Queen Placer Project is anticipated to require at least seven years to mine. Reclamation of the mined areas is basically concurrent reclamation; therefore, the majority of the earthwork would be completed within seven years. Reclamation of the ridges, building sites, and other facilities is expected to require at least one additional field season. Seeding would be conducted as the earthwork is completed. This would ensure that some areas would meet bond release criteria prior to the end of the mining operations, and that adjustments can be made in either the reclamation process or seed mixtures to achieve optimum vegetation establishment.

Eldorado anticipates mining one block of cells each season, or approximately 23 acres of active mining per year. This schedule may be modified after the first year of mining. The areas in Figure 6 would be mined sequentially, with Quartz Gulch being mined first (2009 and 2010), followed in order by Iron Gulch (2011 and 2012), Greenhorn Gulch (2013), and Shasta Gulch (2014 and 2015 or 2016).

Buildings and ancillary facilities would be removed when the mining operation is completed, probably the field season following the end of mining.

Reclamation and re-vegetation monitoring would occur for three years after the completion of mining.

#### 12. Reclamation Plan

Reclamation of disturbed areas resulting from activities outlined in this POO and Reclamation Plan would be completed in accordance with BLM and DOGMI regulations. The BLM is responsible for preventing undue or unnecessary degradation of BLM-administered public lands, which may result from operations authorized by the mining laws (43 CFR 3809). In addition, the

State of Oregon requires that a reclamation plan be developed for mining projects on both public and private lands (Oregon Revised Statute (ORS) 517).

The disturbance related to the Project is summarized in Table 1. Eldorado is committed to restoring the lands within the Project Area to a productive, post-mining condition. To this end, Eldorado recognizes an opportunity to conduct contouring of the disturbance that was left unreclaimed following the historic mining as it relates to the proposed disturbance and post-mining surface drainage.

### Measures to Prevent Unnecessary and Undue Degradation

Measures to be taken to prevent unnecessary and undue degradation are derived from the general requirements established by the BLM as guided by 43 CFR 3809 surface management regulations and Oregon mining and reclamation regulations, water quality regulations, and air quality regulations. These measures would be taken during operation, and closure of the mining operation:

- a) All regulated components of the facility would be designed and constructed to meet or exceed BLM-DOGAMI design criteria;
- b) All pits, tailings settling ponds, and dewatering ditches would be properly backfilled and contoured;
- c) All regulated wastes would be managed according to relevant regulations;
- d) Surface disturbance would be minimized;
- e) Fugitive dust emissions from disturbed and exposed surfaces would be controlled;
- f) Surface water drainage control would be accomplished by diverting storm water, isolating facility runoff, and minimizing erosion;
- g) Where suitable as a growth medium, surface soils and alluvial material would be managed as a reclamation resource and removed, stockpiled, and replaced during reclamation;
- h) A reclamation plan would be implemented which addresses earthwork and re-contouring, re-vegetation and stabilization, and monitoring operations necessary to satisfactorily reclaim the disturbance including: roads, building sites, power lines, fences, water lines, water storage ponds, fuel storage areas, and mining disturbance.

### Growth Media

Soils from undisturbed areas and suitable growth media from the historic tailings areas would be salvaged and stockpiled in several stockpiles located around the site for use in reclamation. Soils from road construction would be stockpiled as berms, and growth media from tailings settling ponds and building sites would be stockpiled at or near the site for later use in reclamation. The washed gravels from the historic placer operation currently support various vegetation types, depending on the available moisture. Any growth media salvaged prior to excavating the historic tailings would be stockpiled near the site where it is removed to facilitate concurrent reclamation.

During final reclamation, growth medium would be placed over the surface of areas disturbed during the mining operation. If the growth medium has become compacted while in the stockpile, it would be tilled prior to replacement in an attempt to regain pre-disturbance bulk densities.



Controlled dozer tracking may be performed during placement of the growth medium to roughen the surface, lightly compact the soil, increase water retention, and prevent erosion. Seedbed preparation and reseeding efforts for areas to be re-vegetated would take place after grading, stabilization, and placement of the growth medium. Seedbed preparation would be performed as follows:

- a) Compacted surfaces would be loosened and left in a rough condition by ripping, followed by dozer tracking or other acceptable methods;
- b) The prepared surfaces would then be seeded using the mixtures and seeding rates previously approved by the BLM and DOGAMI (**Table 2**). Pending the results of the concurrent reclamation, changes to mixes and rates may be implemented following approval by the appropriate agencies. Seeding would be performed by broadcasting and chain harrowing unless precluded by geographic controls; and
- c) If natural drainages cross reclaimed slopes, the natural drainage channel would be re-established and best management practices (BMPs) would be implemented.

### Re-vegetation Procedure

All reclaimed surfaces would be re-vegetated to control runoff, reduce erosion, provide forage for wildlife and livestock, and reduce visual impacts. Seed would be applied with a mechanical broadcaster and harrow. For the purposes of bond calculation, a seed mixture and a preferred application method are proposed. Pending the future results of concurrent reclamation, modifications to the seed mix and/or application methods may be submitted to the BLM and DOGAMI for approval. The seeding rate is expected to be approximately eight pounds pure live seed (PLS)/acre. Seedbed preparation and seeding would take place in the fall after grading and growth media placement as described in the Growth Media Section.

**Table 2: Proposed Re-vegetation Seed Mixture**

Species	Common Name	Pure Live Seed (lb/acre)
<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	Bluebunch wheatgrass	4.0
<i>Leymus cinereus</i>	Great Basin wildrye	2.5
<i>Pascopyron smithii</i>	Western wheatgrass	4.0
<i>Linum lewisii</i>	Lewis blue flax	1.0
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	Wyoming big sagebrush	0.5
<i>Purhsia tridentata</i>	Antelope bitterbrush	1.0
<b>Total</b>		<b>13.0</b>

The seed mixture proposed for the Project Area in Table 2. The mixture would provide forage and cover species similar to the pre-disturbance conditions, thereby facilitating the post-mining land uses of livestock grazing and wildlife habitat. In addition, the seed mix has been determined based on the species' effectiveness in providing erosion protection, the ability to grow within the constraints of the low annual precipitation experienced in the region, its suitability for site aspect, and the elevation and soil type.

Seed application would be accomplished by broadcast seeding and chain harrowing. The proposed seeding rates are shown in Table 2. The seed mix may, upon written approval, be modified over time as information is gained as per species suitability to site-specific conditions.

Reclamation activities would be timed to take advantage of optimal climatic conditions. Scheduling of reclamation activities would occur as soon as possible after the mining activities in a particular area are completed, thus minimizing erosion and sedimentation. General scheduling procedures to be followed include, but are not limited to the following:

- a) Grading, drainage control establishment and maintenance would be conducted as part of the mining operation – continuous during the operational season;
- b) Seedbed preparation would be conducted prior to seeding; and
- c) Seeding would preferably be completed in mid- to late fall.

Eldorado would conduct vegetation monitoring on reclaimed sites within two years of seeding to determine if vegetation establishment has occurred. Monitoring for bond release purposes would be conducted three years after seeding. Vegetation monitoring results would be provided to the BLM and DOGAMI for their review. A site visit would be scheduled when the monitoring indicates that renegotiation success criteria have been achieved.

#### Control of Non-Native Species

Surface disturbance as proposed in this POO and Reclamation Plan creates conditions favorable for the establishment of invasive species. Scotch thistle (*Onopordum acanthium*), whitetop (*Lepidium draba*) and houndstongue (*Cynoglossum officinale*) have been observed on site. Eldorado would contract with a local, licensed, commercial pesticide applicator to treat noxious weeds following contact with BLM to determine BLM procedures are followed. Other noxious weeds found on the site would also be treated following approval by BLM.

#### Interim and Concurrent Reclamation

Interim reclamation is temporary reclamation completed on lands disturbed during operations. Although not at final reclamation contours, interim reclamation provides temporary stabilization. Areas reclaimed during interim reclamation would be disturbed again at some point and undergo concurrent or final reclamation at a later date. Areas that are likely to undergo interim reclamation during the Project life include but are not limited to cut and fill slopes along some roads.

Concurrent reclamation would be a major component of the Malheur Queen Placer Project. Backfilling the pits would be conducted as part of the mining process and contouring and seeding would be conducted at the end of each mining period.

In the event that continuous, full-scale production is interrupted due to economic considerations or unforeseen circumstances, interim reclamation may be initiated. Interim reclamation is outlined below:

- a) *Roads* - The main access road would receive maintenance, as necessary.
- b) *Erosion Control Measures* - All erosion control measures and BMPs would be regularly inspected and maintained.
- c) *Facilities* - All equipment and support facilities associated with the Project would be protected from public access and maintained as necessary.

### *Reclamation of Historic Disturbances*

Opportunity exists for reclamation activities for historic disturbances at the Malheur Queen Placer Project. Some of the placer mining has left cuts in the banks and unnatural topography; these areas would be considered for re-contouring and seeding when included in the area of proposed disturbance or adjacent to the area of proposed disturbance. Eldorado would re-contour these areas to the extent necessary to blend with the reclamation of the newly mined areas. Historic disturbance that is not included in the active mining area of the Malheur Queen Placer Project or immediately adjacent to disturbance created by Eldorado is not the responsibility of Eldorado.

### *Proposed Reclamation Schedule*

At the expected mining rates, the Malheur Queen Placer Project life is estimated at seven years. The reclamation schedule for the Project is based on a nine-year project life. Concurrent reclamation would be conducted to minimize the amount of post-mining reclamation. Concurrent reclamation would involve contouring and re-vegetating the mined areas as soon as practical (See Figures 9 and 10). Upon completion of mining, final re-contouring and seeding would be completed within 12 months of the cessation of operations.

The haul roads, lay-down yard, fuel storage areas, and building sites would all be reclaimed following the cessation of mining. Reclamation of these ancillary facilities would commence once these facilities are no longer needed for operations, closure, or reclamation.

### *Post-Mining Land Use and Reclamation Goals*

Major land uses occurring in the Project area include livestock grazing, wildlife habitat, dispersed recreation, and mineral exploration and development. Following closure, the Project area would support the multiple land uses of livestock grazing, wildlife habitat, recreation, and mineral exploration and development. All post-closure land uses are in conformance with the BLM Vale District Resource Management Plan and Malheur County zoning ordinances.

The objectives of the reclamation program are as follows:

- a) To minimize erosion damage and protect water resources through control of water runoff;
- b) To establish surface soil conditions conducive to the regeneration of a stable plant community through stripping, stockpiling and reapplication of soil material;
- c) To re-vegetate disturbed areas with a diverse, self-perpetuating mixture of plant species in order to establish long-term productive plant communities compatible with existing land uses; and
- d) To maintain public safety by stabilizing or limiting access to land forms that could constitute a public hazard.

### Post-Mining Contour and Topography

The final grading plan for the Project is designed, in part, to minimize the visual impacts of unnatural lines and forms. Slopes would be re-graded to blend with surrounding topography, interrupt straight-line features, and facilitate renegotiation. The side slopes would be re-graded and variable slope angles would be established to resemble natural landforms and to comply with Oregon Administrative Regulations (OAR) §632030-0027 (1)(2). The roads, fuel storage areas, and lay-down yard would be graded to blend with the surrounding topography. All tailings settling ponds would be backfilled and graded to blend with the surrounding topography. The mined areas would be backfilled as part of the mining operation. These areas would be contoured to promote drainage within the gulches. The reclaimed area would include the width of the gulch plus approximately 50 feet on both sides of the mine disturbance to allow blending of the mine disturbance with existing topography and to address some of the historic mining disturbance. Due to the mining process, the post-mining contours would resemble the pre-mining contours, except any historic mining benches within the active mine blocks would be contoured as part of Eldorado's reclamation. Essentially all of the excavated material, minus the gold particles, would be returned to the excavated areas. Pre- and post-mining land contours are provided in Figure 11.

### Reclamation Constraints

Reclamation time may be influenced by many variables including but not limited to weather constraints. The time estimate to complete reclamation is based on the assumption that average weather for the area prevails. Unusual weather events of any type could extend the time for reclamation.

Each mining block would be contoured and stabilized to prevent erosion before the onset of winter. Seeding would be conducted as soon as the earthwork has been completed, generally during late fall. Any earthwork or seeding that cannot be done prior to winter would be completed the following spring. Seeding may be delayed until the following fall to take advantage of fall and winter moisture.



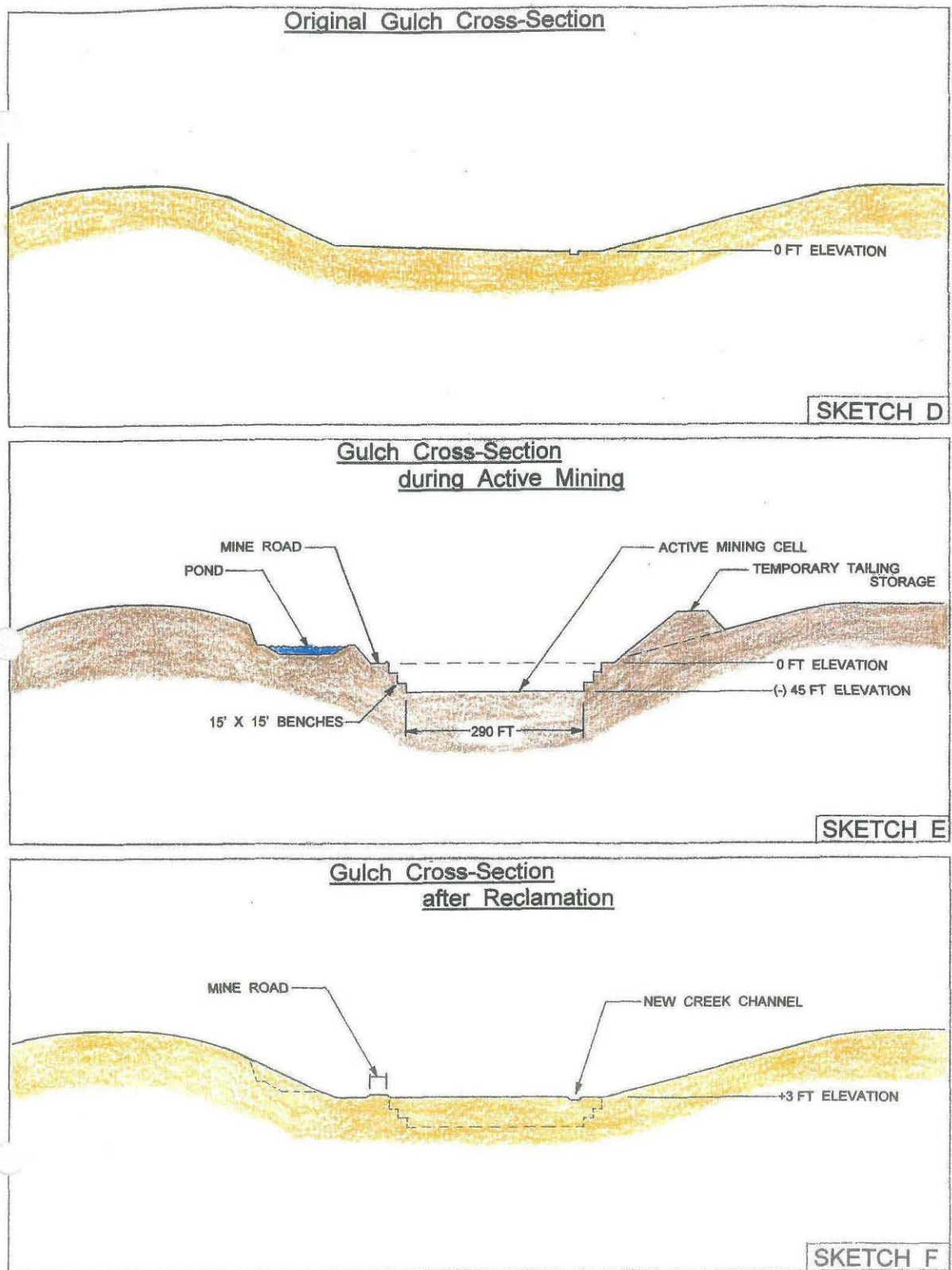


Figure 12: Malheur Queen Placer Project conceptual pre- and post-mining topographic contours (from SRK POO).

### Reclamation Techniques and Locations of Road Features

The roads would be recontoured to the approximate original topography or in a manner consistent with the final surrounding topography. Where roads were constructed by cutting, the edge berm would be pulled back against the inside cut of the road. Dikes and ditches that would no longer be required would be re-graded. Water bars and cross features would be placed in the roads to control runoff and eliminate undue risks to vegetation and water quality. Compacted road surfaces would then be ripped. Growth media that was used as the fill and berms during construction would be uniformly spread over the areas during re-grading. The re-graded surfaces would then be re-vegetated.

### Surface Water Sediment Control

All diversion features and swales to control erosion after closure would be designed to limit erosion and scouring, and to discharge flows resulting from a 25-year, 24-hour storm. This design event was chosen because these facilities are considered to be temporary sediment control structures, which would only be required during mining activities and during the period required for establishing vegetation.

The potential exists for use of liners for the settling ponds to allow for sufficient water recovery (to be determined by percolation tests). If liners are used, the tailings would be sampled and analytical test would be conducted to determine the possibility of long-term acid-generating potential and hydrochemical degradation. Upon determination that the tailings are inert, then the liner would be folded and buried in place once the ponds have dried.

### Disposition of Ancillary Facilities

Once the mining and backfilling are completed, structures would be dismantled and materials would be salvaged and removed from the site. Material removed from the site would be placed in an approved landfill. Any concrete foundations would be broken up and buried in place in such a manner to prevent ponding and to allow vegetation growth. After demolition and salvage operations are complete, the disturbed areas would be ripped to a depth of 18 inches and re-vegetated as previously described in this section. Reclamation of these areas would proceed as soon as practical following removal.

### Roads Not Subject to Reclamation

All surface facilities are anticipated to be reclaimed. However, as deemed appropriate by BLM, any roads on public lands determined to be suitable for public access would not be reclaimed at mine closure.

### Post-Reclamation Monitoring and Maintenance

Eldorado would monitor all reclaimed facilities for a minimum of three years after the cessation of mining, except for areas for which concurrent reclamation has been completed and the reclamation has been approved by BLM and DOGAMI. Post reclamation monitoring and

maintenance would include quarterly inspections of all surface features, including roads, mined areas, building sites, ponds, etc. The sites would be inspected for visible signs of erosion (rills and gullies) or instability. Vegetation monitoring would be conducted to determine if the vegetation cover and variety of species meet the vegetation standards. Water quality monitoring would be conducted on a yearly basis or as required by the Oregon Department of Environmental Quality (ODEQ).

#### Reclamation of In-stream Mining Areas

Reclamation of the in-stream (i.e., gulch) mining would be accomplished concurrently as part of the actual mining process. Waste rock and tailings are backfilled into the previous mining area or pit as the operation progresses along the gulches. Re-contouring of the gulches would occur as the mining areas are reclaimed.

Opportunities for riparian habitat enhancement exist and these opportunities would be discussed with BLM as reclamation progresses. In an effort to minimize hydrologic impacts to the riparian areas, sub-surface, artificial barriers will be constructed down-gradient from active spring areas. These artificial barriers will replace the natural resistance to water flow provided by the natural sediment sorting in the gulches. This effort, combined with avoidance of the riparian areas, should maintain flow stability in the spring areas.

#### Effect of Proposed Reclamation on Future Mining Activity

This reclamation plan should have little effect on future mining in the area. Access to the area would be returned to the pre-mining access.

#### Water Well Abandonment

The existing water well would be closed in accordance with Oregon Administrative Rule (OAR) §690, providing that the water right is not transferred.

### 13. Environmental Protection Measures

#### Public Safety

A security guard would be on site to minimize loss and provide for public safety. Warning signs and temporary berms would be used to restrict public access to the pits. The proponent proposes to place signs that would direct the public to use an alternate route around the mine site, indicated in Figure 9.

#### Hazardous Materials

Petroleum products would be used in the mining equipment. The hazardous materials present at the operations site would consist of diesel fuel, gasoline, petroleum-based oil, hydraulic oil, antifreeze and grease. The diesel fuel would continue to be stored in three above-ground fuel tanks. Diesel tanks would also be required at the generator sites, located at the office/security

residence, the process plant and at the well site. All generators and associated fuel tanks would be placed on lined containment areas.

On-site storage would be limited to 4,000 gallons of diesel, 55 gallons of hydraulic oil, 55 gallons of antifreeze and 55 gallons of motor oil. Fuel storage tanks would be placed on a lined containment area which would provide 110% containment of the fuel should the system fail. Used oil and antifreeze would be contained in a similar manner. Small quantities of cleaning solvents, machine lubricants, and paint would also be used at the project.

Used oil, antifreeze, batteries, tires and other recyclable materials resulting from equipment maintenance would be removed from the site on a regular basis for recycling by a licensed vender. Large quantities of these or other used materials would not be allowed to accumulate at the site, nor would any of these materials be disposed on or in the land at the site.

All hazardous material spills regardless of size would be cleaned up. Motorized equipment would be maintained to prevent leaks or fluid loss. Equipment would be moved to the equipment maintenance area before service and maintenance is performed. Spills would be cleaned up immediately using oil absorbent pads. Contaminated soil would be removed. The proponent proposes to store spilled material or contaminated soil in sealed 55-gallon drums that would be removed by a licensed vender.

Garbage and scrap metal dumpsters would be placed on site to facilitate a neat and clean working environment. No disposal of waste or scrap would occur on site.

### Water Management

Best Management Practices (BMPs) would be employed during all mining activities to prevent or minimize erosion from the disturbed areas. Erosion control measures would be used to protect stockpiled topsoil.

The primary source of water for the Malheur Queen Placer Project would be subsurface flow within the existing tailings from historic mining. The gulches filled with the historic tailings (gravels) provide subsurface flow of meteoric water that has infiltrated the alluvium. The subsurface flow would be gathered in dewatering ditch up gradient of each area to be mined. The water collected in the ditch would be pumped to the clear water supply pond and used subsequently in either the placer plant or at the concentrate processing facility.

Water used at both the placer plant and the concentrate processing facility would be recycled to the tailings settling pond. As the tails settle out of the water, the water would be transferred back to the clear water supply pond for reuse in the mining process.

Replacement water, if necessary, would be obtained from the existing water well within the Project Area. The well was constructed on September 27, 1980 under the Oregon Water Resources Department Water Rights Division Permit # G-13389 for Water Right Application # G-14442 to Eldorado Resources LLC. The maximum permitted rate of use is 0.17 cfs for the purpose of mining.



Water distribution lines from the clear water pond to the placer plant and the concentrate processing facility and from the placer plant and concentrate processing facility to the tailings settling ponds would be high density polyethylene (HDPE) pipe placed above ground. Water lines from the well for replacement water would be trucked to the clear water supply pond as this pond location would change during the mining process.

Water quality is expected to be maintained by allowing the solids to settle into the tailings settling ponds before the water is reused. Seepage from the settling ponds into the gulch is anticipated, returning the water to the same subsurface flow system from which it was obtained. Water quality would be monitored as required by ODEQ.

#### Noxious Weeds and Invasive Species Management

The proponent would develop and implement a weed monitoring and control program that meets BLM requirements. A BLM-approved certified weed-free seed mix would be used for reclamation of all disturbed areas (Table 2).

During surface-disturbing construction and maintenance activities, the proponent shall ensure that all construction equipment and vehicles are cleaned of all vegetation (stems, leaves, seeds, and all other vegetative parts) prior to entering public lands in an effort to minimize the transport and spread of noxious weeds. During surface-disturbing construction and maintenance activities, the proponent shall ensure that all construction equipment and vehicles are cleaned of all vegetation (stems, leaves, seeds, and all other vegetative parts) prior to leaving public lands in areas that are known by the Authorized Officer of the BLM to be infested with noxious weeds.

#### Dust Control

The Proposed Action would be conducted under an air emission permit issued by ODEQ. The proponent would spray water on haulage ways and stockpiles to suppress dust during operations.

#### Wildlife

The existing four-strand barbed wire fence around the existing settling ponds may restrict wildlife access to that area of the process facility. The Proposed Action would not include installation of additional fences or other features that would restrict the movement of wildlife or stock except at the active placer operation area. Should any wildlife mortalities occur, as a consequence of the Proposed Action, the BLM and the Oregon Department of Fish and Wildlife (ODFW) would be notified immediately.

#### Cultural Resources

The proponent would avoid known cultural and paleontological resources and immediately notify BLM of any resources that may be discovered during the operation. If fossil flora and fauna resources are located during the Proposed Action, the area will be flagged and avoided or the fossils will be recovered prior to resumption of activities.

## Reclamation

The POO provides details for proposed reclamation as required by the Surface Management Regulations at 43 CFR 3809. Reclamation would be focused on stabilization and protection from soil erosion through the use of re-contouring, re-grading, and renegotiation activities where appropriate to meet the reclamation objectives as outlined in the United States Department of Interior (USDI) Solid Minerals Reclamation Handbook #H-3042-1 (BLM, 1992), Surface Management of Mining Operations Handbook H-3809-1 (BLM, 1989a), and re-vegetation success standards per BLM Vale district Policy “Guidelines for Successful Re-vegetation” (BLM, 2004).

Reclamation would consist of removal of the processing facilities, fences, gates, utilities, equipment, buildings and supplies. All concrete footings, slabs, and foundations would be buried by at least three feet of growth medium. The water well would be abandoned by a licensed well driller according to the State of Oregon regulations or the water source transferred to an appropriate individual or agency who would accept full responsibility for the well. Stockpiles of rock would be placed back in the final pit. All final pits and trenches would be backfilled and re-contoured to blend with surrounding topography and reseeded. The ephemeral streambed would be reestablished. Temporary erosion control measures would be used until a desirable plant community has been established.

Eldorado would implement concurrent reclamation activities by backfilling the previous mining area with gravels and material from the active excavation. The active pit size would be kept at a minimal size to allow for safe equipment operation. Seeding would be done during October through March after each mining phase is completed. A BLM approved seed mix would be used.

A financial guarantee would be accepted by the Vale District Office Adjudication Branch for the reclamation liability before operations can begin.

Monitoring would be conducted to evaluate the long term stability of the site. Corrective measures would be taken should they be needed to control erosion or insure renegotiation success.

### **B. Alternatives to the Proposed Action**

#### **1. No-Action Alternative**

Under the No-Action alternative, the POO would be rejected. The current unreclaimed notice-level work of approximately two acres and the water well would require reclamation (however, there is currently no financial guarantee secured by the BLM).

### III.DESCRPTION OF THE AFFECTED ENVIRONMENT

This section describes the existing environment of the proposed project area and how the area would be affected by the Proposed Action.

The majority of the Proposed Action would be located on the moderate sloping, mountain front terrain of the south flank of the low mountains between Burnt River and Willow Creek from 3420 feet to 3820 feet elevation. This portion of low mountains has intermittent streams that discharge south to Willow Creek and Malheur Reservoir.

The fifteen critical elements of the human environment are subject to requirements specified in statute, regulation, policy or executive order and must be considered in the Proposed Action and Alternative's in all EA's. The elements present within the Project Area have been analyzed in this EA; all others have not been further analyzed.

**Table 3: Critical Elements of the Human Environment**

<b>Critical Element</b>	<b>Present</b>	<b>Affected</b>	<b>Critical Element</b>	<b>Present</b>	<b>Affected</b>
Air and Atmospheric Values	Yes	Yes	Native American Religious Concerns	No	No
Areas of Critical Environmental Concern	No	No	Special Status Species	Yes	No
Cultural Resources	Yes	No	Wastes, Hazardous/Solids	Yes	Yes
Environmental Justice	No	No	Wetlands/Riparian Zones	Yes	Yes
Farmlands	No	No	Water Quality (Surface & Ground)	Yes	Yes
Floodplains	No	No	Wild & Scenic Rivers	No	No
Invasive Nonnative Species	Yes	No	Wilderness	No	No
Migratory Birds	Yes	No	Wild Horses & Burros	No	No

In addition to the critical elements listed in Table 2, the following other resources are present or would be affected in the Project Area, and are analyzed in this EA.

Vegetation  
Geology  
Soils

Wildlife  
Visual Resources  
Recreation

Socioeconomic Resources  
Human Health and Safety

**A. Affected Environment****1. Air and Atmospheric Values**

The Project area is located within the U.S. Environmental Protection Agency, Region 10, Eastern Oregon Air Quality Control Region. The air quality in the area is generally good and typical of large rural areas within the Great Basin and Owyhee Uplands. Wind measurements for the site have not been recorded. However at Hereford, Or, 16 miles northwest of the Project area, the wind is from the southwest approximately 10 months of the year and the average speed is 3.1 MPH, with a low average speed of 0.5 MPH and a high average speed of 11.4 MPH (USBR, 2005). Winds may also blow from the north, northeast and southwest. The mean annual precipitation is approximately 11.3 inches while the average annual air temperature is 46 degrees F (WRCC, 2005). The principal source of air contaminants in the project area is from wind-blown dust, both off dry rangeland in the region and from occasional traffic along dirt roads. During the summer months dust storms and rangeland wildfires may negatively affect air quality. Intermittent excavation at the Shasta Gulch Community Pit is occasionally detrimental to air quality.

**Climate Change**

The temperature of the planet's atmosphere is regulated by a balance of radiation received from the sun and the amount of that radiation absorbed by the earth and atmosphere. Greenhouse gases (e.g., carbon dioxide and methane), as well as water vapor and particulate matter in the atmosphere keep the planet's temperature warmer than it would be otherwise; allowing the planet to sustain life. While these gasses and particles have occurred naturally for millennia, there has been a marked increase in their atmospheric concentration since the start of the industrial age, contributing to observed climatic variability beyond the historic norm. As appropriate, this plan describes (1) the effects that a changing climate may have on the resources in the planning area, and (2) how the reasonably foreseeable activities under each alternative would affect climate change.

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) greenhouse gas (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO<sub>2</sub>(e) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."<sup>6</sup>

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900,



with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5 to 10.4°F above 1990 levels. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

As with any field of scientific study, there are uncertainties associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty, because they are based on well-known physical laws and documents trends (EPA 2008).<sup>7</sup>

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

It may be difficult to discern whether global climate change is already affecting resources, let alone the Planning or Decision Areas for the RMP. In most cases there is more information about potential or projected effects of global climate change on resources. It is important to note that projected changes are likely to occur over several decades to a century. Therefore many of the projected changes associated with climate change described below may not be measurably discernible within the reasonably foreseeable future.

Existing climate prediction models are global in nature; therefore they are not at the appropriate scale to estimate potential impacts of climate change on the project area.

<sup>6</sup> Intergovernmental Panel on Climate Change (IPCC). 2007a. Climate Change 2007: Synthesis Report (Summary for Policymakers). Cambridge University Press. Cambridge, England and New York, New York. Available online at: [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf).

<sup>7</sup> U.S. Environmental Protection Agency. 2008. "Climate Change – Science – State of Knowledge" webpage. Available online at: <http://www.epa.gov/climatechange/science/stateofknowledge.html>.

## 2. Cultural and Paleontological Resources

Cultural resources in the project area are associated with early mining activity in the form of hand-stacked cobble stones, remains of vehicles and equipment, and refuse from the mining camps.

A large push for settlement of the west came in 1849 with the rush of gold seekers to California. By 1864, gold was located in gold-bearing ground just west of Mormon Basin on the high ridge that separated the Burnt River from upper Willow Creek. The Shasta Mining District (Eldorado and Malheur City) was the third settlement in the county. The next mining town (east of the Project area) was Amelia City, known as New Diggings. Miners kept arriving in Mormon Basin during the winter of 1862-63. Things were beginning to slow down by 1882-1883 when it was reported that a Chinese company and two American companies were washing the gravels. By 1901-02, only the Chinese were left to mine the tailings as the Americans turned their attention to hard rock mining. Malheur City was the longest-lived mining town in Malheur County; the post office was operational until 1944 and then burned in 1957 by a range fire. The headstones at the cemetery in Malheur City document the Spanish influenza epidemic of 1918-1919 and record the sad story of the decimation of families over Christmas 1918 as young children succumb to the virus. By October 1918 the outbreak is thought to have killed over 500,000 Americans and over 20 million people world-wide.

To provide water to for hydraulic mining operations, the Eldorado Ditch was constructed to bring water approximately 110 miles from the Burnt River. The assurance of water increased the populations in the mining communities, bringing stability until the gold played out. The ditch was dug by Chinese contract crews by hand. When complete, the Ditch started at Elk Creek in the upper Burnt River drainage crossed the south fork of the Burnt River and continued east along the southern slope of the Burnt River drainage to the Shasta Gap area. There it crossed over to the Willow Creek drainage, cutting southeast down to Eldorado and Malheur City and then east to Amelia. Eleven miles of the ditch were constructed between 1863-1867. In 1869, local promoters got additional funding and by the end of 1870, the Ditch had been completed from Elk Creek to Malheur City. The stretch from Malheur City to Amelia was completed between 1870 and 1874.

### *Historic Wagon Roads*

Two historic wagon roads are located to the east and west of the Project area. The Dallas Military Road Company was awarded this land grant in 1868. The route of the Dallas Military Road is located approximately 3 miles to the north of the Project area. The intent of this road was to link Dallas on the Columbia River with Boise, Idaho and pass through mining towns like Canyon City. This road is also known as the Canyon City-Boise Road. The road extended some 330 miles, and is identified on GLO maps. The Dallas Military Road went from The Dallas to Canyon City, then up the John Day River drainages and into the local area west of South Willow Creek and southwest of Ironside Mountain. It crosses South Willow Creek and cut directly across to lower Willow Creek, near the present day town of Brogan. From there it followed Willow Creek down to its confluence with the Malheur River and joined the old Oregon Trail heading southeast to the Snake River crossing and on to Boise. The road was used by emigrants, freighter and miners.

The Ontario to Burns Freight Road was in operation from 1884 to 1913. Along this road, freight was brought to Westfall and past Hanna Station over to Castle Rock and south through Agency Valley and southwest to Drewsey and westward into Burns. This road is a primary access route from Vale to Castle Rock and south to Juntura. Both of these roads are outside of the proposed project area and will not be affected by this action.

### *Paleontological Resources*

Across the Vale District surveys for fossil flora and faunal resources have located plant, animal and fish fossils as well as petrified wood. Fish fossils are located in lacustrine sediments dated to the Miocene and are associated with the Deer Butte and Grassy Mountain formations, and noted for diversity and abundance. Larger faunal species such as camel, horse, turtle, sloth and rhinoceros as well as smaller rodents are among the species that may be located in fossil-bearing sediments as well as later species such as mammoth, mastodon and bison.

There are no known Native American Traditional Cultural Properties or sacred sites in or near the project area.

### 3. Invasive Non-Native Species

The BLM utilizes several laws that authorize control of noxious weeds on public land under their administrative jurisdiction, e.g., The Federal Insecticide, Fungicide and Rodenticide Act (1972), Federal Noxious Weed Act (1974), FLPMA (1976), Public Rangelands Improvement Act (1978).

ORS 570.505 defines “noxious weeds” and mandates land owners and land management agencies to include control of noxious weeds on lands under their jurisdiction. Guidelines and listed noxious weeds may be found in the Oregon Department of Agriculture, Noxious Weed Control Policy and Classification System. See the Policy available on the internet at [egov.oregon.gov/ODA](http://egov.oregon.gov/ODA).

Noxious weeds known to occur in the vicinity of the Malheur Queen Project area are included in Table 4.

**Table 4: Noxious Weeds in the Vicinity of the Malheur Queen Placer Project**

<b>Common Name</b>	<b>Scientific Name</b>
Poison Hemlock	<i>Conium maculatum</i>
Russian Knapweed	<i>Acroptilon repens</i>
Spotted Knapweed	<i>Centaria maculosa</i>
Leafy Spurge	<i>Euphorbia eslua</i>
Medusahead	<i>Taeniatherum caput-medusae</i>
Perennial pepperweed	<i>Lepidium latifolium</i>
Puncturevine	<i>Tribulus terrestris</i>
Bull thistle	<i>Cirsium vulgare</i>
Canada Thistle	<i>Circium arvense</i>



Musk Thistle	<i>Cardus nutans</i>
Scotch Thistle	<i>Onopordum acanthium</i>
Yellow Star Thistle	<i>Centaria solstitialis</i>
Whitetop	<i>Lepidium draba</i>

When introduced to an area, these non-natives, invasive plant species can quickly dominate the landscape if management action is not initiated to control the infestations' expansion. Noxious weeds may proliferate, forming monocultures, which can crowd out other plants that provide biodiversity. Weeds are spread from infested areas by people, equipment, animals and wind. Of the weeds listed in Table 4, Scotch thistle, houndtongue and whitetop are established in the Project area. Disturbed areas provide an optimum environment in which these weeds may dominate.

Except for a small portion of Quartz Gulch, a thorough inventory in the immediate vicinity of the proposed action has not been conducted; however, casual inventory along roadways in that vicinity is conducted on a yearly basis. To the east of the Project area, including Amelia Town site to the Baker County line, into Mormon Basin and the Willow Creek Canyon areas have been intensely surveyed.

#### 4. Special Status Species

The Great Basin population of the Columbia spotted frog (*Rana luteiventris*) is a Federal Candidate species and is restricted to portions of southeastern Oregon, Idaho, Nevada, and Utah. The primary threat to these frogs is through loss of habitat, whether from water diversions, long-term effects of grazing, mining operations, or other habitat modifications that reduce the water table or pool depths. In the proposed project area, Columbia spotted frogs occur and are known to breed in a small pond and wetland area in Quartz Gulch (T13S, R41E, SWSW Sec 29). The pond is typical spotted frog spawning habitat, with emergent cattails, sparse riparian cover, and some floating macrophytes. Upstream and downstream from this pond are small wetlands with thick cattails or shallower ponds and seeps.

Spotted frogs often do not breed, feed, and hibernate in the same site and therefore need suitable habitat between those sites to act as corridors of movement. The corridor must be moist to provide protection from desiccation and must provide cover as protection from predators.

Columbia spotted frog breed in ponds in early spring. On April 16, 1997, an adult female and one large egg mass were observed in the Quartz Gulch pond at the base of dry cattail stalks in 0.5m water. A survey of the Quartz Gulch area was completed on April 20, 2009 and no egg mass, tadpoles, or Columbia spotted frogs were located.

Tadpoles do not emerge as metamorphosed frogs until late July or August, and therefore are dependent on the maintenance of open water until then. Adults and metamorphosed frogs disperse in summer away from breeding ponds and then utilize shallower wetlands and seeps such as are also found in Quartz Gulch. Frogs overwinter underwater near springs and may use the breeding pond or some other area in Quartz Gulch with fairly deep, permanent water. The nearest



known Columbia spotted frog populations to Quartz Gulch are in Mormon Basin 7 miles to the east, but populations likely exist in habitats along Willow Creek.

On-the-ground field investigations were conducted for sensitive/protected plant species. One special status plant species, Snake River goldenweed (*Pyrrocoma radiata*), is known from the general vicinity of the project area. This species is listed by the state of Oregon as Endangered and is considered a Species of Concern by the U.S. Fish and Wildlife Service. A stable site of several hundred individuals grows at Huntington Junction, which is southeast of the project area by approximately seven miles. Habitat for the species includes a limestone-derived soil, with the population center for the species in the vicinity of Lime, Oregon. The Malheur Queen Placer Project appears to be to the west and out of the range of habitat and soils known to support populations of this species.

## 5. Water Resources

The Malheur Queen Placer Project area is located within the Upper Willow Creek Watershed in the Willow Creek Subbasin. This subbasin flows into the Middle Snake River-Boise Basin in the Middle Snake Subregion. This is all part of the Pacific Northwest Region that flows into the Colombia River drainage system.

Groundwater in the Project Area vicinity flows from north to south along perennial and ephemeral drainages. Water from the drainages generally flow to Willow Creek which flows from west to east and into Malheur Reservoir. Discharge from Malheur Reservoir is to the southeast to the town of Brogan and, ultimately, Willow Creek discharges to the Malheur River at Vale.

There is an existing water right on Quartz Gulch that flows into Boswell Ditch, with priority date of 1895. The right authorizes 1 cfs for mining and 0.03 cfs for irrigation. Stipulations on the flow of the irrigation water are 0.05 cfs flowing from 4/1 to 5/1 and 0.03 cfs flowing from 5/1 to 9/1 for a total of 6 Acre Feet.

There is an existing water right on Shasta Gulch that flows into Campbell Ditch, with priority date of 1895. The right authorizes 1 cfs for mining, 0.2 cfs for irrigation, and 2 cfs for instream flow. Stipulations on the flow of the irrigation water are 0.38 cfs flowing from 4/1 to 5/1 and 0.2 cfs flowing from 5/1 to 9/1 for a total of 45 Acre Feet.

There is an existing water right on Shasta Gulch that flows into the Morfitt and Worsham Ditch, with priority date of 1895. The right authorizes 0.44 cfs for irrigation.

The water well located approximately 1 mile north of Willow Creek was found to be flowing at approximately six gallons per minute. The static water level in the well was, therefore, two feet above ground surface when considering the height of the surface casing. The water-bearing formation developed during well construction was encountered between 250 and 400 feet in what is described as “soft sandstone”. The well is capable of producing approximately 65 gallons per minute from 300 feet (Well Log and Report to the State, October 2004). The proponent reports that annual testing indicates the static level has remained constant. Water from the well meets

Oregon State Standards for drinking water quality. It should be noted that the well was constructed without authorization on BLM land in 1980.

## 6. Vegetation

A variety of plant communities are found in the project area. One riparian community occurs in an area of perennial water flow and consists of several willow (*Salix*) species, rose (*Rosa woodsii*), and a limited number of rushes (*Juncus* sp.) and sedges (*Carex* sp.). Due to the greatly disturbed nature of the area from livestock grazing, identification of the native riparian species has not been possible. Numerous weedy and exotic species are found in the channel, including whitetop (*Lepidium* sp.) and Scotch thistle (*Onopordum acanthium*).

Upland plant communities consist of a variety of big sagebrush (*Artemisia tridentata*) types with understories of grasses, which may include bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festua idahoensis*), Sandberg bluegrass (*Poa secunda*), and giant wildrye (*Elymus elymoides*). Forbs in the understories include milkvetches (*Astragalus* sp.), phlox (*Phlox* sp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), hawksbeard (*Crepis* sp.), lupine (*Lupinus* sp.) Bitterbrush (*Purshia tridentata*) occurs throughout the area, but is concentrated particularly on the talus piles remaining from placer mining activities from many years ago. Several individuals of western juniper (*Juniperus occidentalis*) are scattered in the vicinity. Vegetative conditions of the upland sites range from low seral to high seral/potential natural communities within the project area. The low seral condition areas support extensive pockets of cheatgrass (*Bromus tectorum*) and burr buttercup (*Ranunculus testiculatus*), two exotic species which are indicators of heavily disturbed sites.

The Malheur City fire burned a portion of the Project area in the 1957 and the area has been disturbed by past mining activities.

## 7. Geology

The Project Area is situated in the southeastern edge of the Blue Mountains physiographic province where it grades in to the Owyhee Uplands physiographic province. The Blue Mountains province is comprised of five major terranes which originated in an ocean environment to the west. Each terrane contains a distinctive assemblage of rocks and fossils. These terranes collided with the North American craton from the late Triassic through late Cretaceous time. The Project Area is dominated by rocks of the Olds Ferry terrane which is characterized by volcanic and sedimentary rocks associated with volcanic island chains or archipelagos similar to those in the north and western Pacific Ocean (Orr and Orr, 1999).

The lithologies most prominent in the Project Area are Jurassic and Upper Triassic sedimentary and volcanic rocks identified as olive-drab, pale-brown, dark-gray, and black volcanic graywacke and siltstone; lesser conglomerate and slate, and minor limestone and chert. Another distinct suite of rocks in the area are Cretaceous and Jurassic intrusive rocks characterized as a hornblende and biotite-quartz diorite (tonalite), trondhjemite, granodiorite, and small amounts of norite in batholithic masses and large dike-like bodies. Visible in the gravel deposits are Upper? and middle Miocene? welded tuffs and tuffaceous sedimentary rocks that are partly to densely welded

vitric and vitric-crystal tuff of soda-rhyolitic, rhyolitic, and rhyodacitic composition that interfingers with and grades laterally into some non-welded ash-flow tuff and tuffaceous sedimentary rocks. Figure 12 and Table 5 provide a more detailed view and description of the Project Area geology.

The majority of the Project Area is covered by Pleistocene and Pliocene terrace and pediment gravels that are comprised of unconsolidated to poorly consolidated gravels and bouldery soils. These gravel deposits are commonly found on pediments above pluvial lake levels, on terraces above modern stream channels, and as lag deposits. The clasts are composed mostly of basalt and andesite with lesser amounts of other lithologies including white, vein quartz.

The Project Area is structurally complex and is generally near the junction of several major fault zones and corresponding crustal lineaments. The northwest-southeast trending Olympia-Wallowa lineament encompasses the north-northwest trending Vale fault zone and the northwest trending Snake River fault zone. Additionally, the east-west trending John Day fault zone may have added to the complexity of the bedrock structure in the area. Generally, the faults in the area have been determined to trend north to northwest along the Vale fault zone trend.

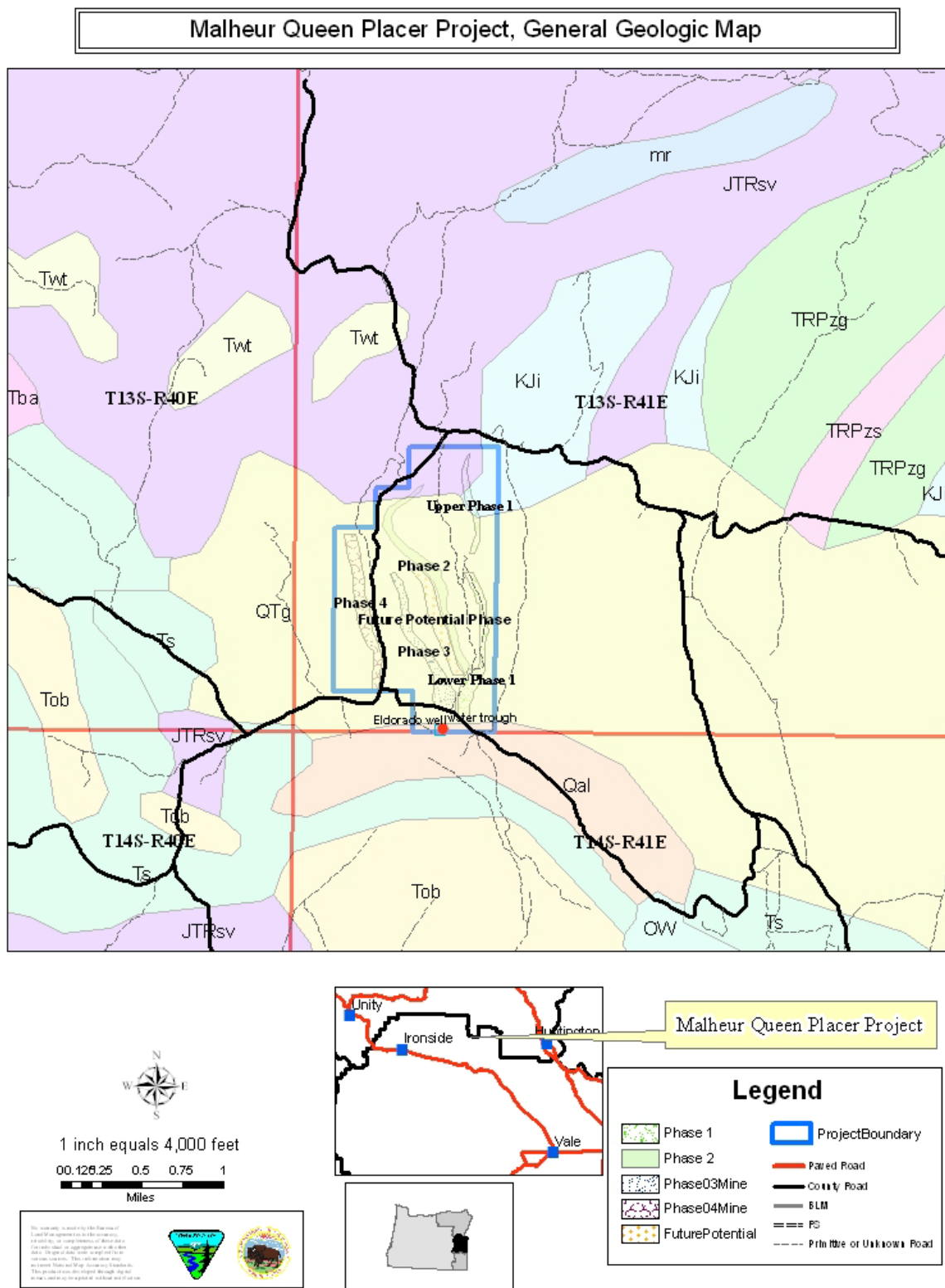


Figure 13: Malheur Queen Placer Project General Geologic Map.



**Table 5: Description of Geologic Map Units (Excerpted from Walker and MacLeod, 1991)**

Qal	Alluvial deposits	Holocene	Sand, gravel, and silt forming flood plains and filling channels of present streams. In places includes talus and slope wash. Locally includes unconsolidated sediment marginal to playas, soils containing abundant organic material, and thin peat beds.
QTg	Terrace and pediment gravels	Pleistocene and Pliocene	Unconsolidated to poorly consolidated gravels and bouldery soil. Commonly on pediments above pluvial lake levels, on terraces above modern stream channels, and as lag deposits. Clasts composed mostly of basalt and andesite. Locally cemented by caliche.
Ts	Tuffaceous sedimentary rocks and tuff	Pliocene and Miocene	Semi consolidated to well-consolidated mostly lacustrine tuffaceous sandstone, siltstone, mudstone, concretionary claystone, pumicite, diatomite, air-fall and water-deposited vitric ash, palagonitic tuff and tuff breccia, and fluvial sandstone and conglomerate. Palagonitic tuff and breccia grade laterally into altered and unaltered basalt flows of unit Tob. In places, includes layers of fluvial conglomerate and, in parts of the Deschutes-Umatilla Plateau, extensive deposits of fanglomerate composed mostly of Miocene basalt debris and silt. Also includes thin, welded and nonwelded ash-flow tuffs. Vertebrate and plant fossils indicate rocks of unit are mostly of Clarendonian and Hemphillian (late Miocene and Pliocene) age. Potassium-argon ages on interbedded basalt flows and ash-flow tuffs range from about 4 to 10 Ma. Includes the Drewsey Formation of Shotwell and others (1963); sedimentary parts of the Rattlesnake Formation of Brown and Thayer (1966) – an interstratified ash-flow tuff has been radiometrically dated by potassium-argon methods at about 6.6 Ma (see Fiebelkorn and others, 1983); Bully Creek Formation of Kittleman and others (1967); Dalles Formation of Newcomb (1966, 1969); Shutler Formation of Hodge (1932), McKay beds of Hogenson (1964) and Newcomb (1966) (see also Shotwell, 1956); Kern Basin Formation of Corcoran and others (1962); Rome beds of Baldwin (1976); parts of the (now obsolete) Danforth Formation of Piper and others (1939), Idaho Group of Malde and Powers (1962), Thousand Creek Beds of Merriam (1910); the Madras (or Deschutes) Formation, the "Simtustus formation" of Smith (1984), and the Yonna Formation (Newcomb, 1958).
Tba	Basalt and andesite	Miocene	Lava flows and breccia of aphyric and plagioclase porphyritic basalt and aphyric andesite; locally includes flow breccia, peperite, some palagonite tuff and breccia, and minor silicic ash-flow tuff and interbeds of tuffaceous sedimentary rocks. In Basin and Range and Owyhee Upland provinces unit grades upward into more silicic, andesitic, and quartz latitic flows and flow breccia, as well as some interbedded tuffs and ash-flow tuffs; also in this region includes aphyric and highly porphyritic,

			plagioclase-rich basalt. Interfingers with and grades laterally into units Tlf and Tts. Commonly contains montmorillonite clays, zeolites, calcite, and secondary silica minerals as alteration products on fractures and in pore spaces. Age, mostly middle Miocene, but includes some rocks of early Miocene age based on vertebrate fossils from related sedimentary units and on potassium-argon ages that range from about 13 Ma to about 19 Ma; most isotopic ages are about 13 to 16 Ma. Includes Steens Basalt (Steens Mountain Basalt of Fuller, 1931) Owyhee Basalt of Corcoran and others (1962) and Kittleman and others (1967), Hunter Creek Basalt and "unnamed igneous complex" of Kittleman and others (1965, 1967), and flows of Prineville chemical type (Uppuluri, 1974; Swanson and others, 1979), which previously were considered part of the Columbia River Basalt Group (Swanson, 1969a).
TRPzg	Gabbroic rocks	Mesozoic and Paleozoic	Most gabbro genetically related to ultramafic rocks but some probably derived from metamorphism of Triassic and older volcanic rocks.
mr	Mixed rocks	Mesozoic and Paleozoic	Intermingled, commonly highly sheared metasedimentary, metavolcanic, and igneous rocks. Includes serpentinite, altered gabbro, chert, siliceous phyllite, greenstone, and limestone.
KJi	Intrusive rocks	Cretaceous and Jurassic	Hornblende and biotite-quartz diorite (tonalite), trondhjemite, granodiorite, and small amounts of norite in batholithic masses and large dike-like bodies. Includes Bald Mountain Tonalite and Anthony Lake Granodiorite of Taubeneck (1957), tonalite and trondhjemite of Wallowa batholith and Cornucopia stock (Taubeneck, 1964; Nolf, 1966), quartz diorite intrusion in the Snake River area (Morrison, 1963), quartz diorite and minor other intrusive rocks in the Caviness quadrangle (Wolff, 1965), quartz diorite northeast of John Day and southeast of Ironside Mountain Thayer and Brown, 1964), quartz diorite in the Sparta and Durkee quadrangles (Prostka, 1962; 1967), and granodiorite and related rocks of the Pueblo Mountains (Roback and others, 1987). Rubidium-strontium and potassium-argon ages indicate an age range from about 94 to 160 Ma (Taubeneck, 1963; Thayer and Brown, 1964; Armstrong and others, 1976).
Twt	Welded tuffs and tuffaceous sedimentary rocks	upper? and middle Miocene?	Partly to densely welded vitric and vitric-crystal tuff of soda-rhyolitic, rhyolitic, and rhyodacitic composition that interfingers with and grades laterally into unit Tlf. Includes some nonwelded ash-flow tuff and tuffaceous sedimentary rocks. Potassium-argon ages range from about 13 to 16 Ma. In Harney and Malheur Counties, it commonly overlies unit Tmb. Includes Dinner Creek Welded Tuff of Haddock (1965; 1967) and middle and upper Miocene ash-flow tuffs of Rytuba and others (1982; 1983a, b), widely exposed in the Trout Creek Mountains and adjacent areas, erupted from the McDermitt caldera complex, west and southwest of McDermitt, Nevada-Oregon, the White Horse caldera, northwest of McDermitt, and several other vent areas.

JTRsv	Sedimentary and volcanic rocks	Jurassic and Upper Triassic?	Olive-drab, pale-brown, dark-gray, and black volcanic graywacke and siltstone; lesser conglomerate and slate, and minor limestone and chert. Includes more extensive outcrops of Triassic or Jurassic limestone at north base of Juniper Mountain in northern Malheur County and near Huntington in southeastern Baker County. Interlayers of silicic and intermediate volcanic rocks are rare. Locally metamorphosed to prehnite-pumpellyite and zeolite facies and in places to greenschist facies. Folded, sheared, and locally foliated. Includes the Weatherby Formation of Brooks (1979). Age is Late Triassic(?) and Early and Middle Jurassic (Sinemurian-Callovian).
OW	Open Water	Recent	

## 8. Range Management

The proposed site is located within the 1,420 acre Malheur City Allotment (#00130). The allotment is one pasture and consists of 1,267 acres of public land and 153 acres of unfenced private land. BLM grazing allotment management categories include “Improve”, “Maintain”, or “Custodial” status. Grazing allotment management categories were originally assigned by Vale BLM staff in 1982 in accordance with Washington Office direction. BLM Districts were directed to classify all grazing allotments with due consideration given to their improvement potential and anticipated needs for intensive management. Given the limited financial resources available to BLM, investments made to facilitate grazing allotment management were to be based on an “MIC” priority status. “T” allotments receive the highest priority and “C” allotments receive the lowest priority. Where warranted, “the management category for allotments may be changed by BLM managers in response to new information or changing resource management issues.” The allotment is categorized as an “M”<sup>1</sup> allotment and contains 1.8 miles of stream in Shasta Gulch. The current management plan for the allotment specifies a rotating spring/fall livestock season of use as identified within the Ironside EIS Area Rangeland Program Summary (RPS), 1981.

Ironside Associates Limited Partnership are the authorized livestock permittees for the allotment and their current forage allocation is 289 active AUMs with 39 AUMs suspended for a total preference of 328 AUMs. The livestock permit was recently renewed in the spring of 2005 with a new term and condition that states “BLM is now in the process of implementing the Standards for Rangeland Health and Guidelines for Livestock Management. This permit is subject to modification as necessary to achieve compliance with these Standards and Guidelines.” The Malheur City Allotment is within the Willow Creek Geographical Management Area (GMA) and is scheduled for a Rangeland Health Assessment in 2009.

There are no developed livestock watering areas with troughs within the allotment. Livestock rely on undeveloped springs scattered throughout the drainages allowing for good dispersal of cattle when they are grazing within the allotment.

<sup>1</sup> Allotment is managed to maintain current satisfactory resource conditions and will be actively managed to ensure resource values do not decline.

## 9. Wildlife and Fish

The project area and associated uplands provide habitat for a variety of wildlife species common to sagebrush-steppe habitats. Species known or suspected to occur in the area follow:

<i>Landbirds</i>	Ferruginous hawk, Swainson's hawk (BT), greater sandhill crane (BT), long-billed curlew (BT), *Brewer's sparrow, horned lark, western meadowlark, *black-throated sparrow, *sage sparrow, *loggerhead shrike (BT), *sage thrasher, and *greater sage-grouse (BA).
<i>Mammals</i>	prebles shrew (BT), coyote, pronghorn, and mule deer.
<i>Reptiles</i>	<i>Northern sagebrush lizard (BT), desert horned lizard (BT), and longnose leopard lizard (BT).</i>

Species associated with shrub steppe habitats that have declined substantially in the area evaluated during the Interior Columbia Basin Ecosystem Management Project (ICBEMP, 2003) area since historical times are denoted with an asterisk (\*). BT = Bureau Tracking species; BA = Bureau Assessment species.

For analysis purposes, the alternatives are evaluated in relation to the NMMFP and the SEORMPFEIS, which described a variety of desired habitat conditions and management considerations that, when met, would result in the support of healthy, self-sustaining populations and communities of wildlife on public land.

No fishes occur in Quartz, Iron, Greenhorn, and Shasta Gulch drainages proposed for mining. Willow Creek, immediately downstream from these gulches, is inhabited by native non-game species such as speckled dace and redbreast shiners, as well as trout which may have originated from stockings at Malheur Reservoir.

## 10. Visual Resources and Recreation

The site is located in a Visual Resource Management (VRM) Class IV area. The objective of VRM Class IV is to provide for management activities that require major modification of the landscape. These management activities may dominate the view and become the focus of viewer attention. However, every effort should be made to minimize the impact of these projects by carefully locating activities, minimizing disturbance, and designing the projects to conform to the characteristic landscape. The Proposed Action would occur at 3420 to 3820 feet in elevation at the transition from upper fan to eroded mountain slope primarily within or aside ephemeral and perennial streambeds. The slopes are mostly tan to brown showing the color of the rock and soil while reflecting the colors of the vegetation mostly as dark green, green-gray to gray-brown that appear dotted to patchy in texture.

The Proposed action would be visible to travelers on the Willow Creek County Road. It would conform to the objectives of VRM Class IV. The preexisting disturbance at the site is noticeable



due to color contrasts resulting from de-vegetation, the metallic components of the buildings and the equipment already present. Figure 12 shows the extent of the existing disturbance. The proposed action is along four gulches with unimproved roads accessible from the Willow Creek Road. Shasta Gulch Road, north of Willow Creek Road, is an improved gravel road providing access to Bridgeport, Baker County, Oregon from Malheur County. The Shasta Gulch Community Pit (OR-55703) mineral material site (rip-rap, road base) is located adjacent to Shasta Gulch road at the northwest edge of the Project boundary.

Recreation consists of dispersed use big-game and upland bird hunting, rock hounding, gold panning, and sight-seeing.

## 11. Wilderness Study Areas

Wilderness Study Areas (WSA) are not present within the project area and therefore will not be discussed further in the affected environment nor the effects analysis.

## 12. Non-Wilderness Study Area Lands with Wilderness Characteristics

The disturbance area associated with Malheur Queen Placer Project has been excluded from any citizen-proposed wilderness characteristics unit (WCU). The contiguous BLM land parcel is 1,191 acres of which approximately 243 acres have been disturbed by historic mining activity. The historic mining activity was focused on the four primary gulches in the parcel and the proposed project will also focus on these gulches. There is also disturbance associated with access roads and trails on the ridges. Two County-maintained roads pass through the BLM parcel. One road is generally north to south from Shasta/Willow Creek to Bridgeport in Baker County and one road is from west to east along Willow Creek past Willow Creek Reservoir to Brogan, Oregon. BLM maintains the 20-acre Shasta Gulch Community Pit (shale rock) near the northwest edge of the project area.

The parcel does not meet the size requirement for consideration as a wilderness characteristic unit. The County roads are regularly used for recreation and access and are maintained by the Ironside Road District. The Shasta Gulch Community Pit is routinely excavated to provide road maintenance material. The area was not selected as a citizen-proposed wilderness characteristic unit.

## 13. Access

Access to the proposed project site would be via Oregon State Highway 26, 38 miles northwest of Vale, Oregon to the Indian Creek Road. The project area is then 6.4 miles to the Willow Creek Road and then an additional 2.5 miles to the Project area as shown on Figure 1. The primary use of the access road is by area livestock permittees, small mine and prospecting operations and recreationists. Access to public land adjacent to the proposed project area could be made by existing alternate routes.

#### 14. Socioeconomic Resources

Malheur County is a county located in the southeast corner of the state of Oregon. The county was named for Malheur River, which flows through it. Its county seat is Vale.

##### History

Malheur County was created February 17, 1887, from the southern portion of Baker County. It was first settled by miners and stockmen in the early 1860s. The discovery of gold in 1863 attracted further development, including settlements and ranches. Basques settled in the region in the 1890s and were mainly engaged in sheep raising.

##### Economy

The county is 94 percent rangeland. The Bureau of Land Management manages 72% of the surface land in the county. Irrigated fields in the county's northeast corner, known as Western Treasure Valley, are the center of intensive and diversified farming. Malheur County's economy also depends on tourism. Because of its economic relationship with Idaho, most of Malheur County observes Mountain Standard Time, making it the only county in Oregon that does not follow Pacific Standard Time.

##### Geography

According to the U.S. Census Bureau, the county has a total area of 25,719 km<sup>2</sup> (9,930 mi<sup>2</sup>). 25,607 km<sup>2</sup> (9,887 mi<sup>2</sup>) of it is land and 111 km<sup>2</sup> (43 mi<sup>2</sup>) of it is water. The total area is 0.43% water.

##### Demographics

As of the census of 2000, there are 31,615 people, 10,221 households, and 7,348 families residing in the county. The population density is 1/km<sup>2</sup> (3/mi<sup>2</sup>). There are 11,233 housing units at an average density of 0/km<sup>2</sup> (1/mi<sup>2</sup>). The racial makeup of the county is 75.78% White, 1.22% Black or African American, 1.02% Native American, 1.96% Asian, 0.08% Pacific Islander, 17.38% from other races, and 2.56% from two or more races. 25.62% of the population are Hispanic or Latino of any race.

## Malheur Queen Placer Project, Existing Disturbance

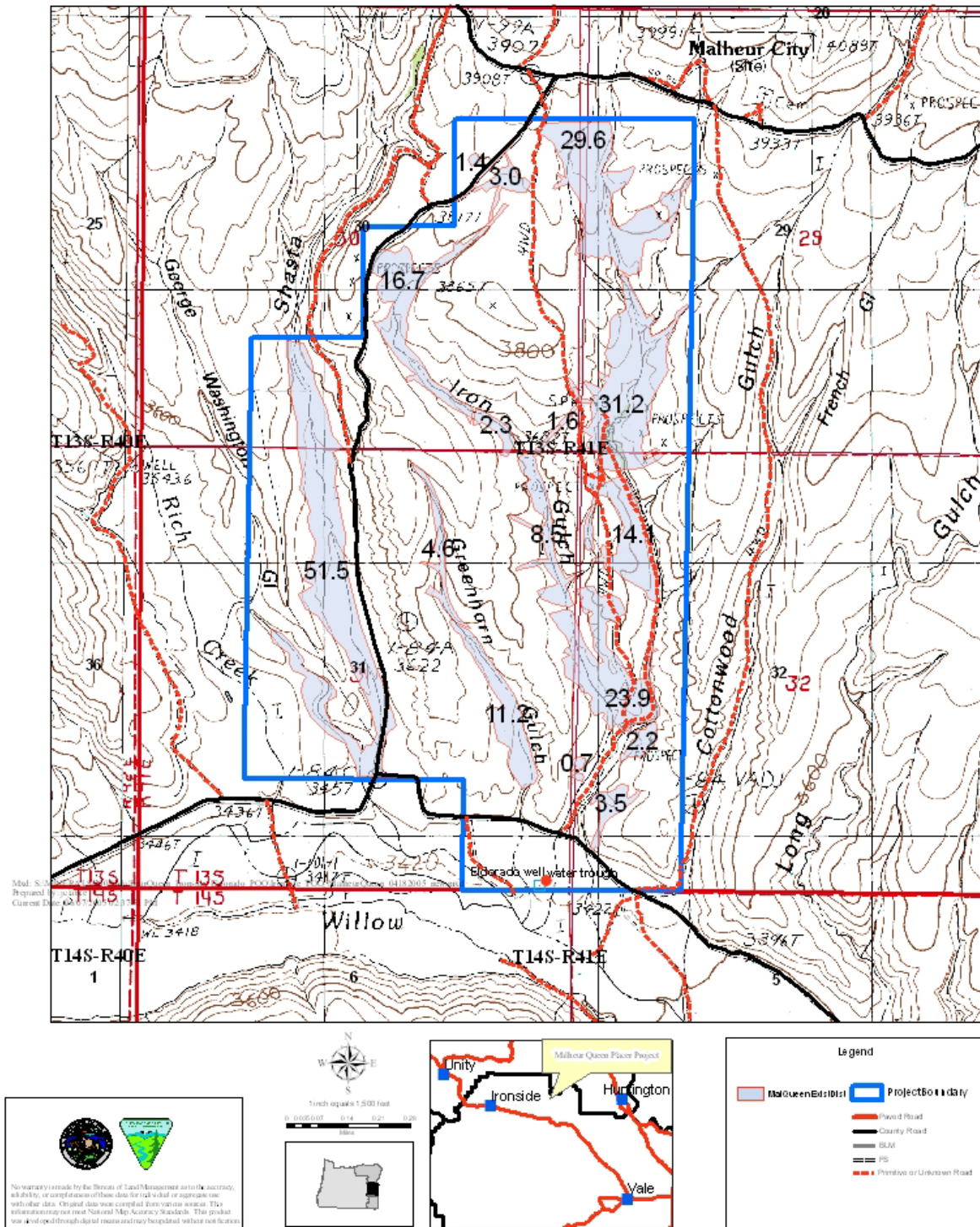


Figure 14: Malheur Queen Placer Project Existing Disturbance (approximately 206 acres).

There are 10,221 households of which 36.20% have children under the age of 18 living with them, 57.30% are married couples living together, 10.40% have a female householder with no husband present, and 28.10% are non-families. 23.70% of all households are made up of individuals and 12.00% have someone living alone who is 65 years of age or older. The average household size is 2.77 and the average family size is 3.28.

In the county, the population has been defined as 27.60% under the age of 18, 10.60% from 18 to 24, 27.20% from 25 to 44, 21.00% from 45 to 64, and 13.70% who are 65 years of age or older. The median age is 34 years. For every 100 females there are 116.00 males. For every 100 females age 18 and over, there are 121.20 males.

The median income for a household in the county is \$30,241, and the median income for a family is \$35,672. Males have a median income of \$25,489 versus \$21,764 for females. The per capita income for the county is \$13,895. 18.60% of the population and 14.60% of families are below the poverty line. Out of the total population, 25.80% of those under the age of 18 and 11.60% of those 65 and older are living below the poverty line.

#### 15. Human Health and Safety – Hazardous Materials

The project site would be closed to public access during operations to minimize contact with mining related activities and reduce the potential for injuries to uninformed visitors. Minor amounts of hazardous petroleum products could be introduced to the environment if equipment were to malfunction or need repair at the site.

#### 16. Soils

The soils found in the area of the proposed project were surveyed and described in Oregon's Long Range Requirements for Water 1969, Appendix I-10, Malheur Drainage Basin. This is fourth order soil survey. The major portion of the project area is made up of the mapping unit Virtue-Gacey on three to seven percent slopes. The northern portion of the project is Locey soils on 12 to 35 percent slopes.

Virtue soils make up approximately seventy percent of the mapping unit. They are moderately deep to a duripan, well-drained soils derived from old lacustrine and alluvial deposits mixed with loess and volcanic ash on terraces along Willow Creek. Virtue soils are used mostly for range, but they have a high potential for range seeding.

Gacey soils make up approximately thirty percent of the mapping unit. They are shallow to a duripan, stony, well-drained soils on old, gently sloping high stream terraces. Gacey soils are used for range, but stones and depth limit their suitability for range seeding.

Locey soils are moderately deep, well-drained soils over shale with loess in the surface layers. They occur on gently to very steeply sloping uplands near Baker County. Locey soils are used mostly for range. They have some potential for range seeding.



## IV. ENVIRONMENTAL CONSEQUENCES

### A. Proposed Action

#### 1. Air and Atmospheric Values

The proponent would operate under an air pollution control permit from the State of Oregon and comply with all applicable guidelines in the permit. The Proposed Action could include multiple 1.5-mile water haulage trips from the well to the process plant and mining area. Up to 192 additional acres would be denuded exposing gravel-rich soils to wind erosion which would contribute to fugitive dust. The mine operators would travel the gravel road from Highway 26 to the mine site on a daily basis. Fugitive dust from the proposed action would have low to moderate impacts, in part, due to the implementation of environmental protection measures.

While global and national inventories are established, regional and state-specific inventories are in varying levels of development. Quantification techniques are in development – for example, there is a good understanding of climate change emissions related to fuel usage; however measuring and understanding the effects of albedo is less comprehensive. Analytical tools necessary to quantify climatic impacts are presently unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined.

#### 2. Cultural and Paleontological Resources

##### Prehistoric and Historic Culture

A Class III cultural resources survey for prehistoric and historic sites would be conducted prior to surface disturbing activities. Any sites located during the survey would be recorded and avoided as determined by the BLM archaeologist. A cultural resources survey of the first proposed mining area along Quartz Gulch was completed in 1997. No cultural resources were located during the survey of that proposed project area, however that project only disturbed six acres. Additional surveys would be conducted of the area to be disturbed prior to beginning each phase of mining.

Prehistoric sites that may be located in the area will probably be associated with and adjacent to existing water sources, springs and perennial drainages. Lithic scatters and campsites are possible. It is unlikely given the geology and topography of the area that rock art, rock shelters will be present.

Historic sites are located within the boundaries of the project area, and the project area itself can be described as a historic mining site. Associated site types will include can scatters and dumps, remnants of old wooden structures (houses, sluice boxes,) metal items (stove parts and pieces, wheels and axels), as well as the surface manifestations of old rock piles and water canals. Historic sites will be consistent with those associated with mining activities.

During a reconnaissance of the area proposed to be disturbed during Phase 1, two historic can dumps were located. These can scatters date from the late 19th century to the mid 20th century and will be recorded.

### **Paleontological Resources**

At present there are no known fossil flora and faunal localities within the area of the proposed Malheur Queen Mining Project area. A survey for fossil flora and fauna was also conducted at the same time as the survey for cultural resources. If fossil flora and fauna resources are located during the Proposed Action, the area will be flagged and avoided or the fossils will be recovered prior to resumption of activities.

#### **3. Native American**

There are no known Native American sacred sites or traditional cultural resource sites. As stated previously, the Project area has experienced historic mining activity. Should Native American sites be identified, BLM would be notified. As per §3809.420 (8), operators shall not knowingly disturb, alter, injure, or destroy any scientifically important paleontological remains or any historical or archaeological site, structure, building or object on Federal lands.

#### **4. Invasive Non-Native Species**

The possibility exists that the heavy equipment for the Proposed Action would spread noxious weed seeds along the proposed access route. The spread of seed would occur by attaching to the tires/undercarriages on the equipment. The Proposed Action should not promote the spread of noxious weeds with implementation of mitigating measures.

Mitigating measures include:

1. The proponent shall power wash the undercarriage and wheels/tracks of equipment prior to entering the project area.
2. The proponent shall implement a weed control program to control noxious weeds found during operations and after reclamation.
3. Seed mixes used for re-vegetation and straw bales used for erosion control barriers shall be certified weed free. Impacts would be low if mitigation measures are followed.

#### **5. Special Status Species**

Dewatering of the wetland and pond habitat caused by mining operations in Quartz Gulch would have the most severe effects on Columbia spotted frogs. The operators' "dewatering trenches" would be excavated to bedrock to intercept groundwater up-gradient of the block being mined, and when the operation is downstream of the pond/seep area this process would likely drain water currently stored and retained in the wetland area. When the operation excavates upstream of the wet area, interception of groundwater would interfere with and decrease flow to the frog habitat.

Although the operators propose to leave the wetland area intact, the potential for dewatering the habitat and thereby extirpating the frog population would be high.

An inventory for Snake River goldenweed was conducted at an appropriate time of year, and no plants of this species were observed within the project area. No other special status plants or habitat were found at the time of the survey. Consequently, no special status plants are anticipated to be impacted by this project.

## 6. Water Resources/Riparian

Consumptive water use is expected to be primarily for domestic purposes from the water well.

Trenches constructed during the mining process would be used to collect alluvial ground water to provide a drier working environment and provide water for the placer operation. The water would be pumped or diverted from the dewatering trenches to a series of clarification ponds where sediment would be settled and the clarified water would be used for mining. As there is no consumptive use of water in the mining procedure, all water, with the exception of evaporative losses, would be returned to the alluvial aquifer down gradient of the mining operation.

Impacts to water resources would include possible contamination from leaks or spills related to use of mechanized mining equipment. Removal of vegetation along or within perennial and ephemeral drainages makes soils susceptible to erosion and increase potential for sedimentation during seasonal runoff. Evaporation from the clarification ponds would occur but losses are expected to be minimal as the water would be returned to the alluvium upon final clarification. Disturbance of the alluvium would increase the porosity allowing more rapid infiltration of precipitation events.

Impacts are anticipated to be low subject to application of mitigation measures and compliance with State standards and permits. The successful implementation of constructed hydrologic barriers up- and down-gradient of the riparian area in Quartz Gulch is perceived to maintain a balance of water flow to the spring area.

Existing water rights on the springs and perennial stream would be mitigated by providing adequate alternative water sources for the duration of the project. Potential impacts to the spring and associated riparian area in Quartz would be mitigated by the installation of artificial hydraulic barriers to maintain near-natural water inflow and outflow in the system. Mining in the Shasta Gulch perennial stream would create additional sediment load the must be mitigated prior to discharge from the Project area.

## 7. Vegetation

The Proposed Action would cause the temporary loss of an additional 192 acres of vegetative cover. Top soils are to be stock-piled and would serve as the basis for re-vegetation efforts with native species following completion of mining activities. Riparian vegetation would be removed, and the water source may be affected which would limit establishment and growth of vegetation dependent on the mesic conditions of riparian areas. Disturbed areas would be seeded with a

mixture of native species as shown in Table 2, page 32. Monitoring of the reclaimed site would occur for three years after the completion of mining to assure that re-vegetation is successful. The proponent would conduct annual inspections, using a qualified individual, during the peak green growing season. If viable vegetation is not successful after the second growing season, additional re-vegetation would be performed by the proponent to further mitigate the impacts to vegetation. Immediate impacts would be low to moderate because of the re-vegetation requirements for successful reclamation.

In the long term, the disturbed areas would be returned to modified native plant communities, although some long term impacts may remain to riparian vegetation if water regimes are permanently altered.

## 8. Geology/Mineral Resources

The majority of the processed gravels and bedrock would be placed back in the excavation and the remainder would be used to maintain roads during operations. No other important geological resources would be impacted.

## 9. Soils

The new disturbance area would be approximately 192 acres. Heavy equipment would remove vegetation, compact soils and mix soil horizons potentially making them less productive. Water and wind erosion hazard is low to moderate for estimated soil types in this area. Mitigation would include erosion controls to minimize loss of soil in ephemeral stream beds, ripping compacted soils and replacing salvaged top soil prior to seeding. Impacts to soils would be low because reclamation would be concurrent with the mining operations.

## 10. Range Management

Cattle utilize water flowing from the Quartz Gulch springs and other spring sources inside and outside of the proposed project area. The proposed action may eliminate the spring area in Quartz Gulch as a viable source of livestock water. However, water could be diverted through installation of a solar pump, pipe and trough to meet livestock management needs. The relatively minor loss (<10%) of range resources from surface disturbance associated with the site would have minimal impact on the total livestock grazing activity. Temporary fencing may be required to exclude cattle from active mining areas where equipment and personnel are working. Additionally, temporary fencing may be required to ensure re-establishment of vegetation in rehabilitated areas after proposed excavation operations are completed.

## 11. Wilderness Study Areas

Wilderness Study Areas (WSA) are not present within the project area and therefore will not be discussed further in the affected environment nor the effects analysis.

## 12. Non-Wilderness Study Area Lands with Wilderness Characteristics

The disturbance area associated with Malheur Queen Placer Project is not included in any citizen-proposed wilderness characteristics unit (WCU). The contiguous BLM land parcel is 1,191 acres of which approximately 243 acres have been disturbed by historic mining activity. The proposed disturbance of 192 acres would be within the existing historic disturbance areas.

## 13. Wildlife and Fish

Wildlife impacts would consist of habitat loss and fragmentation, as well as disturbance and temporary displacement during the life of the project (7 to 9 years). As this is a phased project, wildlife habitat and forage would be sequentially replaced by successful (two growing seasons) concurrent reclamation. The noise and human presence resulting from mining activities may cause temporary displacement of rodents, reptiles, birds, and large ungulates (mule deer) that may occur in the project area. Physical injury to less mobile species such as reptiles may occur as a result of proposed project activities.

Restriction of wildlife movements in the project area would be minor since the installation of fences or other movement restrictive features would be relatively small. Impacts to wildlife would be limited given that concurrent reclamation would minimize restrictive features and the small amount of disturbance related to the Proposed Action.

*The following mid-scale objectives are excerpted from the SEORMPFEIS (2001):*

***Wildlife and Wildlife Habitat SEORMPFEIS Objective 1: Maintain, restore, or enhance riparian areas and wetlands so they provide diverse and healthy habitat conditions for wildlife.***

***Wildlife and Wildlife Habitat SEORMPFEIS Objective 2: Manage upland habitats in forest, woodland, and rangeland vegetation types so that the forage, water, cover, structure, and security necessary for wildlife are available on the public land.***

Actions in Proposed Action would temporarily impact riparian communities over about 5 acres as a consequence of mineral extraction, processing, and re-vegetation activities. Habitat values important for meeting the life history needs of most terrestrial wildlife of management importance would be adversely affected due to temporary removal of riparian vegetation and human disturbance as follows:

- In perennial stream segments, woody and herbaceous riparian and upland herbaceous and shrub vegetation removal would eliminate wildlife breeding and foraging opportunities until reestablishment of the vegetation occurs after successful reclamation.
- In intermittent stream segments, removal of herbaceous vegetation and adjacent upland shrubs would also temporarily eliminate wildlife breeding and foraging habitat.



- Machinery and human disturbance on the site would likely disrupt breeding and nesting activities in the spring, causing birds and mammals to avoid the area.
- The creation of water settling and storage ponds would increase the availability of insects for some birds, but this will also provide opportunities for West Nile Virus-carrying mosquitoes to breed, feed, and spread the virus to sensitive species in the area.
- The loss of bitterbrush in the area due to project activities would eliminate forage for big game, birds, and small mammals for approximately 5-20 years.

In the short term (5-20 years) Alternative I would not meet Wildlife and Wildlife Habitat SEORMPFEIS mid-scale objective 1 (riparian habitat) or Wildlife and Wildlife Habitat SEORMPFEIS objective 2 (upland habitat).

Because fish species do not occur in the drainages to be mined, the proposed action would have no direct effects at those sites. However, fish populations in Willow Creek and the downstream Malheur Reservoir could potentially be impacted with increased sediment loads due to erosion from mined areas. Successful reclamation practices will eliminate or minimize potential impacts to water quality. Chemical spills (equipment fuel or lubricants) from the operation could contaminate stream flows in Willow Creek and negatively impact aquatic organisms and the recreational fishery downstream. Best management practices included in the POO require immediate clean-up of any spill and BLM notification.

#### 14. Visual Resources and Recreation

Visual impacts during mining would be moderate. The mining and process areas are not on a prominent location. Visual resources would be improved after reclamation because re-contouring and renegotiation would include the preexisting disturbance and existing mining equipment. After re-contouring, seeding and removal of existing facilities, there will likely be a color contrast between the bare earth or new vegetation verses the adjacent mature vegetation. An office trailer would be located adjacent to Willow Creek road but color coordination to blend with the natural background would mitigate the impact. Lighting for night security and safety may create a nighttime visual disturbance. The effects of the Proposed Action on visual resources would be consistent with BLM Class IV VRM management objectives.

The project area would be temporality closed to recreational activities during the life of the mine. However maintenance of the access road may promote additional visitors. Increased recreational visitors may have a minor impact. The relatively small area would have low impact on recreational activity.

#### 15. Access

The placer mining areas are generally up-gradient or to the west of the processing area. The proponent would use existing access to transport people to the work site and occasional equipment. Any water haulage from the well located in Section 31 could have a moderate to high impact on the Willow Creek Road during wet weather. Access to along the Shasta Gulch-to-Bridgeport Road would not be impaired although sporadic traffic would be slowed on the Willow

Creek Road near the Project Area. Overall impacts would be low with planned regular maintenance by the proponent and Malheur County.

## 16. Socioeconomic Resources

The Proposed Action would provide approximately 15 to 20 jobs for the local economy in the form of shift supervisors, equipment operators, maintenance personnel, and general laborers. Operations management would be conducted by the Proponents who currently reside outside of the county. However, the proponents would rent and maintain a business office in Vale, Malheur County during active operations and would probably purchase supplies from the communities of Vale or Ontario, Oregon.

Most of the equipment for mining and processing will be mobilized to the Project area upon project approval and completion of permitting. Impacts from a project of this scale would be low.

## 17. Human Health and Safety – Hazardous Materials

Impacts from hazardous materials would occur from spills or leaks of diesel fuel and lubricants from equipment, or from fueling and maintenance operations. These impacts would be low based on the small amount of fuel, lubricants, and other fluids used by the equipment in the Proposed Action; containment of these fuels in the equipment; and the spill response actions that would be implemented if a spill did occur. The United States Department of Labor, Mine Safety and Health Administration would be contacted to provide guidance on mine safety regulations and issues.

### **B. Alternative 1 – No Action**

Under No Action, the 10 acres of private land currently disturbed at the site would remain unreclaimed until required by the DOGAMI mining permit. The potential exists for expansion of mining activity north along Quartz Gulch on private land. The historic mining disturbance on public land would be unreclaimed, however, existing, natural vegetation would not be disturbed. There would be some fugitive dust during reclamation and re-vegetation activities on private land. This alternative is not consistent with objectives for mining and mineral resources in the SEORMPFEIS and is in conflict with the Mining Law of 1872 and the Mining and Minerals Policy Act of 1970.

#### 1. Air and Atmospheric Values

The proponent would operate under the existing DOGAMI mining permit. The No Action alternative would contribute no additional fugitive dust. The mine operators would travel the gravel road from Highway 26 to the mine site on a daily basis. Fugitive dust from the proposed action would have low to moderate impacts, in part, due to the implementation of environmental protection measures.

## 2. Cultural and Paleontological Resources

### Prehistoric and Historic Culture

A Class III cultural resources survey for prehistoric and historic sites would be postponed until priorities require the survey.

During a reconnaissance of the propose action area, two historic can dumps were located. These can scatters date from the late 19th century to the mid 20th century and will be recorded.

### Paleontological Resources

At present there are no known fossil flora and faunal localities within the area of the proposed Malheur Queen Mining area. A survey for fossil flora and fauna was also conducted at the same time as the survey for cultural resources.

## 3. Native American

There are no known Native American sacred sites or traditional cultural resource sites.

## 4. Invasive Non-Native Species

The existing non-native species would continue to exist and could naturally expand their range unless herbicides are periodically used as control. The spread of seed would occur by attaching to the tires/undercarriages on the vehicle traffic in the area. The No Action alternative should not promote the increased spread of noxious weeds.

## 5. Special Status Species

The wetland and pond habitat created by historic mining operations in Quartz Gulch would continue to support the Columbia spotted frog. The potential exists that any future mining on private land may dewater the habitat and extirpate the frog population.

No other special status plants or habitat were found at the time of the survey. Consequently, no special status plants are anticipated to be impacted by the No Action alternative.

## 6. Water Resources/Riparian

Consumptive water use is expected to be primarily for stock and wildlife watering.

The water well T. 13 S., R. 41 E., Section 31 would be capped and sealed pending final disposition.

Existing water rights on the springs and perennial stream would remain intact and would not be impaired.

## 7. Vegetation

The No Action alternative would cause no loss of vegetative cover. Riparian vegetation would remain intact. Continued livestock water usage at the spring in Quartz Gulch would remain at current levels.

## 8. Geology/Mineral Resources

The Shasta Gulch Community Pit would remain a source of mineral materials and increased usage is not anticipated. Any future mining on private ground would affect only the gravels in that location. No other important geological resources would be impacted.

## 9. Soils

Impacts to soils would be low with the current level of grazing and recreational uses.

## 10. Range Management

Cattle utilize water flowing from the Quartz Gulch springs and sources outside the project area. The No Action alternative would not alter current grazing activity.

## 11. Wilderness Study Areas

Wilderness Study Areas (WSA) are not present within the project area.

## 12. Non-Wilderness Study Area Lands with Wilderness Characteristics

The disturbance area associated with Malheur Queen Placer Project has been excluded from any citizen-proposed wilderness characteristics unit (WCU). The contiguous BLM land parcel is 1,191 acres does not meet the size requirements of a WCU.

## 13. Wildlife and Fish

Wildlife activity would remain at current levels and impacts to existing habitat would be low.

Because fishes do not occur in the drainages to be mined, the proposed action would have no direct effects at those sites. Fish populations in Willow Creek and the downstream Malheur Reservoir would not be impacted by this alternative.

## 14. Visual Resources and Recreation

Visual impacts would remain intact including the historic mining disturbance. Additionally, the mining equipment, buildings and facilities associated with the private land would likely remain intact. Re-contouring, seeding and removal of existing facilities on the patented land would likely occur in the future as required by the DOGAMI mining permit. The effects of the No Action

alternative on visual resources would be consistent with BLM Class IV VRM management objectives.

The area would remain open to recreational activities comparable with levels currently observed. Increased mineral prospecting and recreational rockhounds may have a minor impact. The relatively small area would have low impact on recreational activity.

#### 15. Access

Access to Shasta Gulch and Willow Creek roads would not be impaired although sporadic traffic would be slowed on the Shasta Gulch road during mineral material extraction operations.

#### 16. Socioeconomic Resources

The No Action alternative would provide no additional jobs or income to the County or State through taxes or fees. This action would not promote business growth or vendor support in the communities of Vale or Ontario, Oregon.

#### 17. Human Health and Safety – Hazardous Materials

Impacts from this alternative would be low.

### C. **Cumulative Impact Analysis**

The Council on Environmental Quality (CEQ) defines cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). A June 2005 CEQ memorandum states:

The environmental analysis required under NEPA is forward-looking, in that it focuses on the potential impacts of the proposed action that an agency is considering. Thus, review of past actions is required to the extent that this review informs agency decision making regarding the proposed action. This can occur in two ways:

First, the effects of past actions may warrant consideration in the analysis of the cumulative effects of a proposal for agency action. CEQ interprets NEPA and CEQ's NEPA regulations on cumulative effects as requiring analysis and a concise description of the identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have a continuing, additive and significant relationship to those effects. In determining what information is necessary for a cumulative effects analysis, agencies should use scoping to focus on the extent to which information is "relevant to reasonably foreseeable significant adverse impacts," is "essential to a reasoned choice among alternatives," and can be obtained without exorbitant cost (40 CFR 1502.22).



Based on scoping, agencies have discretion to determine whether, and to what extent, information about the specific nature, design, or present effects of a past action is useful for the agency's analysis of the effects of a proposal for agency action and its reasonable alternatives. Agencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions combined. Agencies retain substantial discretion as to the extent of such inquiry and the appropriate level of explanation (*Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 376-77 [1989]). Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.

Second, experience with and information about past direct and indirect effects of individual past actions may also be useful in illuminating or predicting the direct and indirect effects of a proposed action. However, these effects of past actions may have no cumulative relationship to the effects of the proposed action. Therefore, agencies should clearly distinguish analysis of direct and indirect effects based on information about past actions from a cumulative effects analysis of past actions.

The following cumulative impact analysis is limited to past, present, and reasonably foreseeable future actions that involve impacts to a resource value that overlaps temporally and/or spatially with the Proposed Action's impacts to that same resource value. Thus, not all actions identified are discussed for each resource.

The Cumulative Effects Study Area (CESA) includes the southern flank of the mountains between the Burnt River area to the north and Willow Creek to the south. It also includes the area immediately west of Shasta Gulch including Shasta Gulch Road and Willow Creek Road. Willow Creek from the Project to Malheur Reservoir is included because the area is down-gradient from the Project area. The socioeconomic resource boundary would include parts of Malheur and Baker Counties.

## 1. Past and Present Actions

Past and present actions located within the assessment area, includes; mineral activities, livestock grazing and recreation.

Mineral activities have occurred in the area since placer gold was discovered in the district in 1864. Extensive placer gold deposits were discovered and mined in Quartz, Iron, Greenhorn, and Shasta Gulches. The early work was done by Chinese placer miners (Gregg, 1950) and the historic towns of Eldorado and Malheur City accommodated the population. Small-scale, modern placer operations have continued in the same locations. Surface disturbance from historic mining activities includes development of mine adits, shafts, open pits, waste rock storage facilities and other facilities. Current mineral exploration activities, consisting of trenching, sampling and reclamation have occurred throughout the area by several operators. There is one recently active exploration operation with surface disturbance of less than 15 acres. All current mining and exploration related disturbances would have to be reclaimed and re-vegetated under DOGAMI

regulations governing surface management of patented land. The water well on public land would be abandoned or could be retained as an alternative livestock or wildlife water source.

Field observations and orthophotographic survey were used to determine that approximately 243 acres of historic mining disturbance exist in the gulch areas proposed for mining. The proposed action would disturb or re-disturb 192 acres within the 243 acres of historic mining area. In 2008, approximately 4 acres of private land disturbed by previous mining activity has been re-contoured under the direction of the Oregon Department of Geology and Mineral Industries (DOGAMI).

Historical and present livestock grazing includes the Malheur City Allotment where there are currently 288 AUMS permitted to Ironside Associates.

The recreational activities in the assessment are includes hunting, fishing, rock-hounding, recreational prospecting and cultural exploration.

Malheur Queen Placer Project, Cumulative Effects Study Area (in Green)

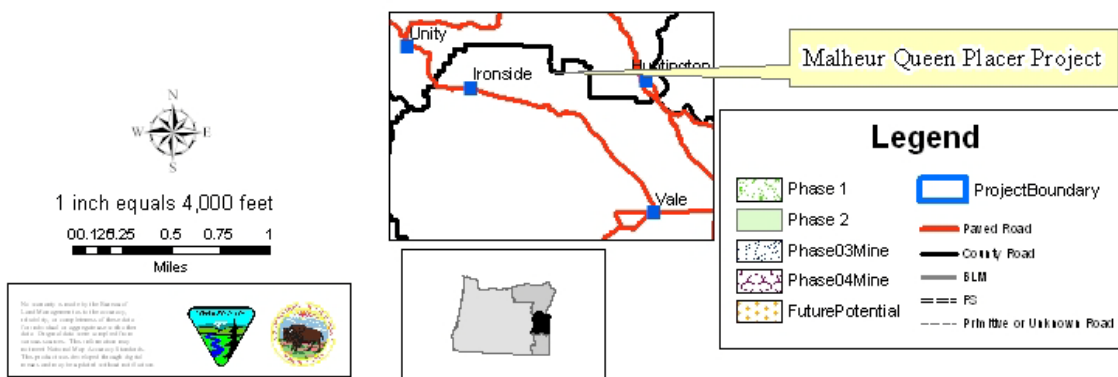
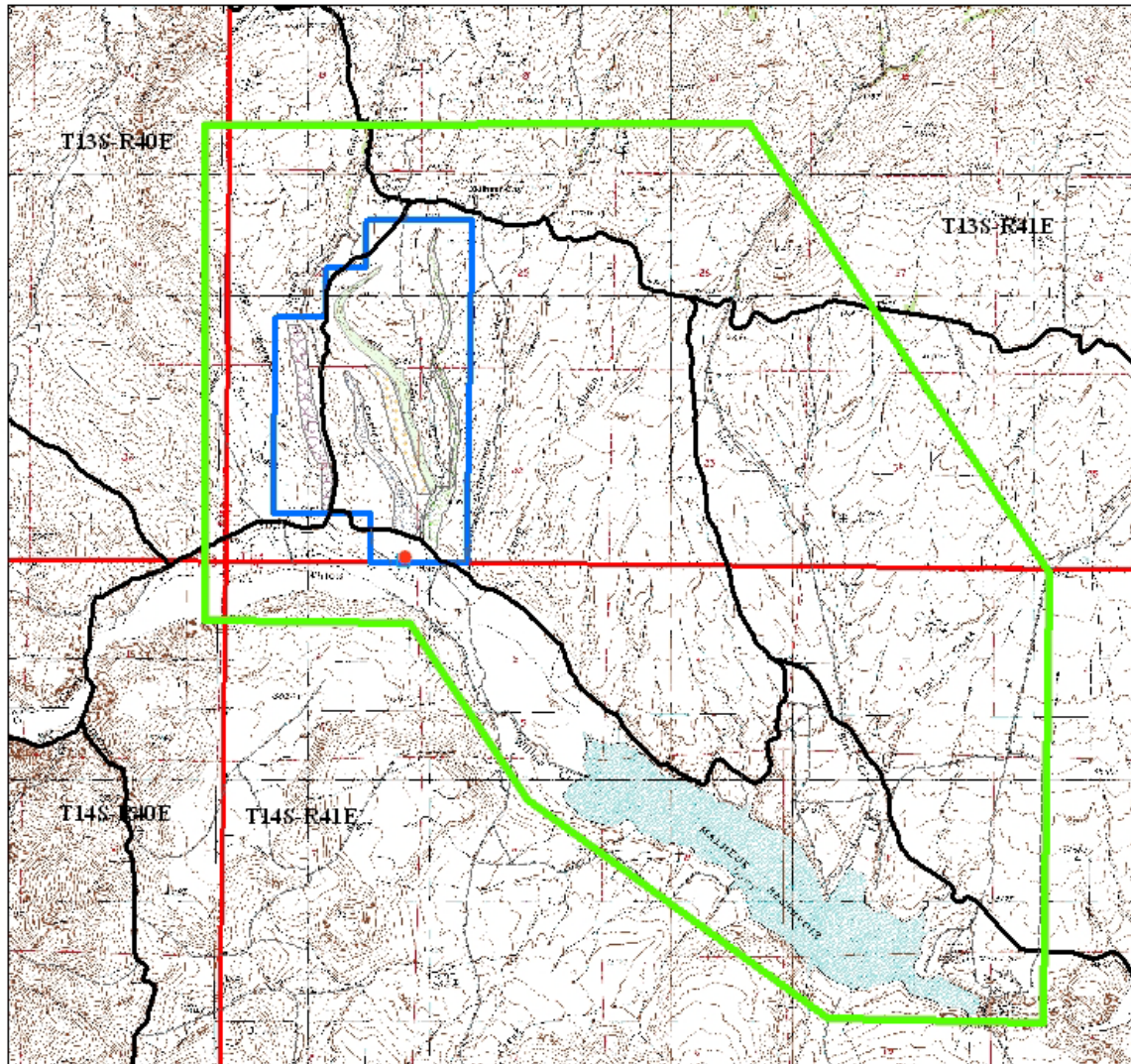


Figure 15: Malheur Queen Placer Project Cumulative Effects Study Area (CESA).

## 2. Reasonably Foreseeable Future Actions (RFFAs)

Reasonable foreseeable future actions in the area include: Continued livestock grazing, most likely at current levels, and continued recreational activities at a level similar to current levels would likely occur. Mineral exploration activities would likely continue. They would potentially include further amendments for additional exploration and mining by the proponent if this project were approved. There are several small-scale, individual casual use placer operations in the CESA and one full-scale placer operation on private land within Basin Creek about five miles southwest of the proposed Project. BLM has not received a notification for any other operations in the area.

## 3. Evaluation of Potential Cumulative Impacts Including the Proposed Action

### *Air and Atmospheric Values*

*Past & Present Actions* – Cumulative impacts to air and atmospheric values from past and present actions include windblown dust, dust from traffic on unpaved roads, dust from excavations related to mineral sampling, and reclamation. The impacts from past and current levels of fugitive dust are considered low.

*Reasonably Foreseeable Future Actions (RFFAs)* – The Cumulative effects from RFFAs including the Proposed Action, future levels of livestock grazing and recreational use would be low to moderate.

### *Cultural and Paleontological Resources*

*Past & Present*—Impacts to cultural resources in the past have occurred from unauthorized collection and excavation, and from inadvertent destruction of cultural resource sites and artifacts from mineral exploration and mining and other developments. Impacts from past actions were moderate. Since the passage of the National Historic Preservation Act of 1966 most impacts from authorized actions have been avoided or mitigated and thus impacts to cultural resources in the CESA are considered low in the present. Cumulative impacts from the proposed action and alternatives would be low. Project design features, Federal regulations, and operational stipulations included in the proposed action strive for minimal cumulative effects to this resource.

*RFFAs*— Cumulative impacts to cultural resources from RFFAs would be low. Should currently unknown culture features become exposed during the mining operation, the BLM's representative would be notified immediately.

### *Invasive Non-Native Species*

*Past & Present* - The possibility exists that the recreational, mineral and grazing related traffic and heavy equipment that would be used for the Proposed Action would spread noxious weed seeds along the proposed access route. The spread of seed would occur by attaching to the tires/undercarriages on vehicles. Cumulative impacts from invasive, nonnative species from present actions in the Cumulative Effects Study Area are expected to be low. Project design



features, Federal regulations, and operational stipulations included in the proposed action strive for minimal cumulative effects to this resource.

*RFFAs* - Invasive/noxious weed impacts would be dependent on the amount of traffic on the access road and amount and degree of surface disturbance. Increased mining activity in the CESA would contribute to the potential for non-native, invasive species to become established. Mitigation measures would be considered to control invasive species during any future mining permitting. Impacts would be low to moderate.

### *Special Status Species*

*Past & Present* – Cumulative impacts have occurred to Columbia spotted frogs as a result of past and present actions. Historic placer operations undoubtedly eliminated populations in mined drainages by removing overlying substrates down to bedrock and disrupting hydrologic regimes. Past and ongoing grazing actions impact frog habitat by compacting soils, increasing nitrates, and removing vegetation cover, although spotted frogs can tolerate certain levels of grazing if management is appropriate. The Quartz Gulch spring and associated riparian area appear to be created or, at least, enhanced by ponds created by the historic (late 1800's) placer mining operations.

*RFFAs* - The Cumulative impacts from RFFAs including the Proposed Action and future levels of livestock grazing would be high during the proposed action. Adherence to the project design features, Federal regulations, and operational stipulations included in the proposed action are anticipated to present minimal cumulative effects to this resource.

### *Water Resources*

*Past & Present* – Ground water impacts from mining include diversion of spring water from Quartz Gulch and pumping of groundwater to meet operational needs for the previous exploratory mining operations, and stream diversion in Shasta Gulch for irrigation use. Impacts would occur in areas of heavy livestock grazing where removal of vegetation increases potential for surface water sedimentation. Recreational activities have had minimal impacts to water resources. Cumulative impacts would be low subject to application of mitigating measures, compliance of Standards for Rangeland Health, allotment specific objectives and Oregon State water standards and permits.

*RFFAs* – Increased mining in the CESA would increase the impact on water resources. Placer mining is inherently dependent on the use of water in separating the gold from the lighter sediment host. Exact water volume requirements for potential mining and processing have not been defined by the Proponent. Water requirements will be quantified during Phase 1 of the mining operation. Dewatering trenches and clarification ponds would increase the potential for evaporative water losses. Dewatering above and below spring areas in Quartz Gulch would like result in elimination of the spring and associated riparian habitat. Mitigation of spring dewatering may be accomplished by the installation of artificial hydraulic barriers to impede water flow to approximate the existing water flow of the alluvial spring system. A substantial increase of



surface area disturbance would increase the potential of surface erosion and sedimentation during storm-water events.

Cumulative impacts would be low to moderate subject to compliance of Standards for Rangeland Health, use of mitigative measures, and adherence to Federal and State water standards and permits.

### Soils and Vegetations

*Past & Present* – Adverse impacts to soils and vegetation associated with mineral actions is dependent on the degree and nature of surface disturbance. Heavy equipment removes vegetation and can compact soils and mix soil horizons making them less productive. A number of past exploration projects have occurred within the cumulative assessment area however, most of the recent operations have been discontinued and with little reclamation occurring. Each of the proposed mining areas has experienced historic mining activity and it is estimated that 243 acres have been previously disturbed by placer operations. Most of the area has been naturally re-vegetated and plant growth appears healthy and vigorous. However, as part of the Proposed Action, reclamation requirements would mitigate most of these impacts. Livestock grazing may affect soils by compaction from trails and in areas of concentrated grazing and increased erosion potential in areas of heavy grazing. These impacts are expected to be low as long as Standards for Rangeland Health are met. Recreational activities have had little to no impacts to soils or vegetation.

*RFFAs* – Mineral related disturbance would increase during the placer mining operation which could disturb up to 168 additional acres. Levels of livestock grazing and recreation are expected to remain relatively similar to present activities. Impacts to soils and vegetation would be moderate to high if the operation is authorized. Long-term outlook is that sustainable reclamation practices would allow smooth re-contouring of the gulches and the approved seed mixture would provide a native plant community.

### Wildlife

*Past & Present* - Cumulative impacts have occurred to wildlife as a result of past and present actions. Wildlife habitat in the CESA area has been slightly reduced due to mineral activities, grazing and recreational activities. Mining roads, trenches and pits hinder wildlife movement and cause fragmentation of habitat. However, reclamation requirements would mitigate most of these impacts. The relative percentage of habitat removed by these activities is small. The cumulative effect of recreational hunting and livestock grazing would be minimal to low within the assessment area. The incremental impacts resulting from the Proposed Action would be minor. Cumulative impacts to wildlife from past and present actions, is considered to be low in the CESA.

*RFFAs* - Cumulative impacts to wildlife and their habitats would continue with RFFAs in the CESA. Concurrent reclamation of surface disturbance of mining related activities would minimize fragmentation of habitat and migration. The destruction of habitat would be short term but could be as much as 50 acres. RFFAs impacts to wildlife within the CESA could be

moderate to high if concurrent reclamation is not required. Depressions containing standing water would be minimized or eliminated by concurrent reclamation to reduce the potential for mosquito habitat. Mitigating measures would be developed to minimize environmental impacts during the permitting process by Federal and State agencies.

### Visual Resources

*Past & Present* – Visual impacts from recreation and livestock grazing are low. Visual impacts from historic mining are considered moderate and the existing mining/processing equipment is considered moderate to high. Cumulative impacts are considered low.

*RFFAs* – Cumulative impacts to visual resources from mining RFFAs are expected to be low to moderate depending on the amount of un-reclaimed surface disturbance. Buildings would be color coordinated to blend with the natural background. Lighting should be focused downward on security areas and for safety considerations. Area lighting would be detrimental to the aesthetic value of the night sky.

### Summary

Overall there would be low to moderate incremental cumulative impacts. Impacts would be reduced subject to implementation mitigating measures and conformance with Federal and State regulations. It is estimated that short-term impacts would be low to moderate, however, with appropriate mitigation measures, concurrent reclamation, and final site reclamation, cumulative impacts to the CESA would be low. The impacts to the Columbia spotted frog habitat could be moderate to high; however, it is anticipated with properly designed hydraulic / hydrogeologic constraints to water flow and monitoring the volume of water inflow and outflow of the area, the riparian area would remain a viable habitat for the species.

#### 4. Cumulative Impacts including Alternative 1 – No Action

The cumulative impacts of the No Action alternative would be similar to those including the Proposed Action.

*Past and present* - Activities in the Cumulative Effect Study Area include livestock grazing, recreational use (hunting and rockhounding), mineral exploration, and placer and hard rock gold mining. Under the No Action alternative, access and activities to the CESA would remain the same. It is estimated the 243 acres of disturbance has occurred as a result of past mining activity. The existing mining disturbances on private land would remain until the requirements of the DOGAMI mining permit are completed. Partial reclamation of the patented land did occur during 2008 under the guidance of DOGAMI.

*RFFAs* - The impacts due to surface disturbance associated with past, present, and reasonably foreseeable future activity could be moderate to high depending on amount and intensity. The existing, albeit naturally re-vegetated, placer mining disturbance in the gulches not incorporated in the DOGAMI mining permit would remain intact. The equipment, structures and debris on the private (patented) land would remain intact as no Federal regulations can require reclamation of

private land. The public notification of the Malheur Queen Placer Project could potentially attract additional miners to the area for exploration activities. The private lands to the north and east of the Project area are dominated by Impacts would be minimized with use of best management practices.

## 5. Mitigation of Impacts by Proposed Action

Approval of this Project would be contingent upon Eldorado acquiring all required State, Local and Federal permits and approvals for surface disturbance prior to commencing mining activities. Mitigation of the surface is also required by BLM surface management regulations which require mitigation of impacts and reclamation of surface disturbances.

Mitigation, as defined in 40 CFR § 1508.20, may include one or more of the following:

- (1) Avoiding the impact altogether by not taking a certain action or parts of an action;
- (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- (5) Compensating for the impact by replacing, or providing substitute, resources or environments.

The Proponent would remove the existing placer mining facilities remaining from activities conducted by Eldorado Resources. All equipment, buildings and debris would be removed from the site and salvaged or disposed of in an approved land fill. Concurrent reclamation would be conducted as the mining operation progresses and an approximate maximum of 50 acres would be disturbed or not reclaimed at any one time. During periods of inactivity all surface disturbances would be stabilized and treated to control invasive species. Storm water run-off and other sediment-laden water would be controlled and contained within the dewatering ponds at all times. No sediment laden water would migrate to Willow Creek.

The Proponent has proposed to avoid mining operations that would eliminate the spring and associated riparian area in Quartz Gulch. Operations up-and down-gradient of the spring areas would require the emplacement of artificial hydraulic barriers to approximate the inflow and outflow from the spring area. The Phase 4 mining sequence in Shasta Gulch would impact sparse riparian vegetation, but the greatest impact would be to irrigation and stock-watering water rights held by Ironside Associates. The water from Shasta Gulch would be diverted around the mining operation providing for no impairment of the existing water right.

All buildings, tanks, and ancillary structures would be color coordinated to blend with natural vegetation until final reclamation or removal. Safety/security lighting would be focused or directed toward the ground to minimize night glare.

Chemicals would not be used to extract gold from the alluvial material in the Project area.

BLM would monitor site activities on a biannual basis or more frequently as required by mining progression. All Federal, State, and Local stipulations and requirements for interim reclamation, re-vegetation, and compliance with regulations would be monitored. It is required by § 3809.500

and § 3809.552 that an insured, financial guarantee for reclamation be secured before mining operations may begin.

The stipulations below would be in effect for the duration of the proposed action to minimize negative impacts to public land resource values:

- A) The Operator and Claimant shall comply with all Federal, State, and County laws, regulations, and ordinances during the life of the project.
- B) The Operator shall obtain all required Federal, State, and County approvals and operating permits prior to beginning operations. The required permits shall be maintained current for the life of the Project.
- C) A financial guarantee, as defined in 43 C.F.R. 3809.500 and §3809.552, must be submitted and adjudicated by the BLM before starting operations. As defined in the Plan of Operations, the financial guarantee shall be in the amount of US\$362,322.
- D) The operator(s) shall bring to the attention of the BLM authorized officer any historic artifacts, cultural, and/or paleontological resources that might be altered or destroyed on Federal lands by their operations. The authorized officer shall evaluate the discoveries brought to their attention, take action to protect or remove the resource, and allow operations to proceed after notification to the authorized officer of such discovery. The authorized cultural officer can be contacted at 541-473-3144. The Vale BLM Archaeologist has agreed that should the mining operation encounter a historic trash dump of 15 or more artifacts then the BLM shall be contacted. Individual items found during mining or retrieved from the placer equipment screens will be set aside for later evaluation. Should mining operations encounter human remains, the mining operation will immediately cease in the particular area and BLM will be notified immediately.
- E) Occupancy by a caretaker on public land is authorized for the duration of the mining operation. Seasonal and temporary interruptions of the mining operations would warrant occupancy by a caretaker to maintain site security. This occupancy would be reasonably incident to the proposed project and in concurrence with the regulations in 43 CFR 3715 Use and Occupancy under the Mining Laws. Reasonably incident means the statutory standard “prospecting, mining, or processing operations and uses reasonably incident thereto” (30 U.S.C. 612). It is a shortened version of the statutory standard. It includes those actions or expenditures of labor and resources by a person of ordinary prudence to prospect, explore, define, develop, mine, or beneficiate a valuable mineral deposit, using methods, structures, and equipment appropriate to the geological terrain, mineral deposit, and stage of development and reasonably related activities.
- F) Only the equipment needed for on-site mining operations, as identified in the Plan of Operations, is authorized to be on-site for longer than 14 days. Any equipment changes must be authorized in writing by BLM. All equipment not included in the POO must be removed during seasonal shut-downs unless the posted bond includes removal costs. As per § 3809.431, “You must modify your plan of operations when any of the following apply: (a) Before making any changes to the operations described in your approved plan of operations...” The intent of this

stipulation to insure that equipment changes that could fundamentally expand or alter the scope or volumes of the operation are approved by the BLM. Also, this stipulation is to insure that equipment mobilized on to Public lands are included in the POO and removal costs are included in the approved financial guarantee as per 43 C.F.R. 3809.552.

G) All equipment shall be inspected to make sure there are no oil leaks or fire hazards and to assure that all equipment is in good condition. It is recommended that all stationary pumps, motors and/or engines be placed inside a dry berm or other protective device to prevent the spreading of oil or fuel and to diminish fire hazards. Hand tools suitable for fighting fire shall be required at the work site, and the Operator must be prepared to suppress any wildfires resulting from operations. The Operator is responsible for remaining informed and in compliance with fire safety requirements such as any Emergency Fire Prevention Orders and the Industrial Fire Precaution Level (IFPL). To obtain the information during fire season, telephone (541) 473-6295.

H) All motorized equipment and vehicles shall be equipped with operational mufflers and spark arresters that meet noise abatement and fire codes. Provisions for fire prevention and control must be made to prevent ignition of dry vegetation from exhaust systems while traveling in this area.

I) During all operations, including periods of non-operation, the Operator shall maintain equipment and other facilities in a safe and orderly manner. No noxious weed seed shall be carried on-site by the machines. Earth-disturbing/construction equipment will be washed prior to traveling off paved roads onto Public lands in Oregon using a regular-sized hose fitted with a nozzle to focus the water stream and provide enough water pressure to remove mud, weeds, plants and foreign matter from the equipment. The earth-disturbing equipment will likely be mobilized to the mine site only once; therefore, the equipment would only need to be washed once prior to mobilization to the mine site. Light vehicles that have mobilized from another area, another part of Oregon, or a different State would be required to be washed in a similar fashion to reduce the chance of bringing exotic weeds to the mine area. The light vehicles traveling daily to and from the mine site would require no special cleaning treatment beyond what is anticipated from a routine maintenance program. No special equipment is stipulated nor anticipated for this stipulation. The proponent shall ensure that all construction equipment and vehicles are cleaned of all vegetation (stems, leaves, seeds and all other vegetative parts) prior to final mobilization from public lands.

J) All fueling and fuel storage shall take place away from drainages, riparian areas, and wet areas. The BLM understands that fueling of the operating placer equipment must take place in-situ and that mining operations may dictate that excavators and other large, mining support equipment may require fueling without mobilizing from the work site. The intent of this standard stipulation is to eliminate or minimize petroleum spills to surface and ground water. It is reasonable to expect that ancillary equipment such as excavators, dozers, and light vehicles can be mobilized from the immediate stream area for fueling or fueled at the beginning or end of the operating shift when access for the fuel truck is not feasible. Common practice in some mining



operations is to have a fueling area and equipment that is fitted with “Wiggins”-type refueling connections to minimize spills. The spill plan shall be in effect during the operation of equipment.

K) At the end of each work season (generally, prior to November 30), all mining disturbance shall be stabilized to prevent erosion. All equipment shall be securely stored in a designated storage area or shall be removed from the site. Exceptions to this practice must be authorized by the BLM.

L) Topsoil and/or growth medium shall be saved for final application after reshaping of the disturbed areas has been completed. For final reclamation, accumulated silt shall be removed from the settling ponds and used onsite as a growth medium where topsoil is not available.

M) Any damage to the existing roads or widening and improvement of the access roads caused by the operators shall be reclaimed at the conclusion of operations. If erosion becomes a potential hazard, the BLM may require the construction of water bars on the roads. For final reclamation, areas of significant cross-country travel must be scarified to reduce soil compaction and seeded with the BLM approved mixture.

N) At the time of final reclamation, all excavations, pits, and decantation ponds shall be back filled, re-contoured to the surrounding topography, and covered with topsoil and re-vegetated.

O) The operator/mining claimant shall seed all disturbed areas with the species listed below, using an agreed upon method suitable for the location. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS) per acre. Seed shall be tested and the viability testing of seed shall be done in accordance with Oregon State law and within 9 months prior to purchase. Commercial seed shall be certified Oregon weed-seed free. The seed container shall be tagged in accordance with State law and available for inspection by the authorized officer. The seed tag(s) shall be delivered to the local BLM office within 30 days of the completion of seeding.

Malheur Queen Placer Operation / Malheur City Area Seed Mixture

Species	Common Name	Pure Live Seed (lb/acre)
<i>Pseudoroegneria spicata</i> ssp. <i>Spicata</i>	Bluebunch wheatgrass	4.0
<i>Leymus cinereus</i>	Great Basin wildrye	2.5
<i>Pascopyron smithii</i>	Western wheatgrass	4.0
<i>Linum lewisii</i>	Lewis blue flax	1.0
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	Wyoming big sagebrush	0.5
<i>Purhsia tridentata</i>	Antelope bitterbrush	1.0
<b>Total</b>		<b>13.0</b>

Pure Live Seed (PLS) formula: % of purity of seed mixture X % of germination of seed mixture = portion of seed mixture that is PLS.

Reseeding must take place between September 15 and December 15 to take advantage of winter moisture.

If mulch is used on seeded areas, it shall be certified weed-free straw or hay.

P) Prior to approval of final reclamation, BLM shall evaluate the site for evidence of well-established vigorous plants of the deep-rooted native species capable of providing competition to noxious weeds and providing organic material over the long-term. The authorized officer shall use evidence of these late seral species on-site after two growing seasons to determine that seedling establishment is adequate to achieve longer-term reclamation objectives through normal management. No seeding of any other, non-native species is authorized. Please contact BLM if any of the species required are unavailable or excessively expensive due to variable availability. After two years of growth, if re-vegetation is unsuccessful, BLM may assist the operator(s) to assure successful vegetative growth.

Q) The operator(s) is responsible for weed control on disturbed land within the limits of the notice-level operations area. However, the Department of Interior and BLM regulations do not allow for the application of general or restricted pesticides (includes herbicides) by anyone other than federally certified or state licensed applicators on public lands. Therefore, prior to the application of any herbicides, the operator shall obtain written approval of a brief plan provided by the operator. Minimum information needed in the plan includes the name(s) of the noxious weeds to be treated, estimated size of the area to treat, the name and application rate of herbicide to be used, method of application, proposed timing of treatment, the applicator's name and Oregon applicator's license number and expiration date, location of chemical storage and planned disposal of empty containers. The Malheur Resource Area weed specialist can be contacted by telephone at (541) 473-3144.

The operator should contact Ms. Silva to see if there is an ongoing BLM noxious weed treatment project within the general claim area. If the weed site within the operations area needing to be treated is relatively small in size, it may be possible to coordinate treatment. However, it may be necessary for the operator to contract with one of several commercial spray applicators available to do this treatment if it shall require more than a few minutes worth of spray time. The Vale District Office maintains a list of several local commercial applicators that the operator can contact. Regular weed control is more cost effective in the long run and shall help insure that reclamation efforts implemented after operations cease have a chance to succeed.

Should the operator possess a current Oregon pesticide applicator's license, he/she shall need to be aware of restrictions on the chemicals approved for use on public lands in Oregon due to court injunction, pesticide use reporting requirements by both the Oregon Department of Agriculture and BLM, as well as other requirements that the Vale District Office can provide at the time of coordination, prior to approval of the proposed treatment.

- R) The operator and/or claimant shall mark or maintain the claim corner markings in accordance with Oregon state laws. Claim boundaries may not be marked with PVC posts.
- S) All garbage and refuse shall be removed from the site to an approved sanitary landfill.
- T) All existing developments, including fences, cattle guards, roads, public land survey monuments, etc., shall be maintained in serviceable condition at all times. Damaged or destroyed developments shall be replaced, restored or appropriately compensated for as determined by the Authorized Officer.
- U) Boundaries of the project area shall be posted to notify public land users to operate motorized vehicles only on existing routes. Within the project area, safety signs shall be appropriately placed to warn public land users of dangers and/or restrictions of access.
- V) Motorized vehicle access shall be provided for the public via the Willow Creek and Shasta Gulch Roads which traverse the project area, or an alternate motorized vehicle access route to meet that need shall be constructed so by the mining operator. Any new such road alignment and construction must have prior BLM approval, and must be constructed so as to meet BLM's best management practices for road construction and maintenance. Upon completion of mining activities, motorized vehicle use routes determined by the BLM as not needed for access purposes and/or to minimize environmental impacts shall be reclaimed so as to blend with the surrounding landscape setting.

The following mitigation measures shall be implemented to minimize negative impacts to public land resource values:

- 1) Mining operations would leave intact the riparian area within Quartz Gulch in T. 13 S., R. 41 E., Sections 29 and 32, W½. This riparian area is potential habitat for the Columbia spotted frog. Periodic evaluation of hydrologic environment and riparian species would be accomplished to document any effects by mining operations. The riparian area is spring fed from Public land and downstream flow migrates to private land (See Figure 15). Discussions, to date, by BLM and the Operator, have led to agreement that the riparian area shall be avoided during the mining operation. The water ponds, established trees and shrubs shall remain intact. To insure reasonably stable water flow is maintained to the riparian area, a planned hydrologic barrier structure or structures shall be designed to approximate the current inflow and outflow from the spring area prior to mining. A suggested method to maintain consistent flow of water to the riparian area is to construct a trench(s) perpendicular to the drainage direction in Quartz Gulch (also assumed to be perpendicular to the ground water flow direction). The trench depth would be variable depending on the depth of the ground water intercept and the depth of mining activity. The wall or walls of the trench would be lined with geotextile, geofabric, or plastic liner and then the trench would be backfilled with rock or gravel material. The liner material would then perform as an artificial barrier to ground water flow. Periodic evaluation of spring, pond and riparian area will be completed by both the Operator and BLM. Evaluation will typically be a visual evaluation of plant vigor, supplemented by photographs, and the water level in the pond. It is anticipated the Operator will complete more regular visual monitoring of the area as operations personnel are on site daily.

- 2) The Columbia spotted frog pond and riparian habitat shall be monitored for increased livestock watering use and intensity. Should an increase in livestock activity occur, then an alternative water source within the immediate area of the existing pond shall be required for livestock water purposes. Bureau Manual Section 6840 states that “the BLM shall ensure that actions authorized, funded, or carried out by the BLM do not contribute to the need for the species to become listed.”
- 3) The Proponent will determine the validity of the existing water rights in the Project area and coordinate that effort with the Oregon Water Resources Department. The existing water rights in Project area shall be mitigated prior to any impairment of those rights by mining activity. Should the resolution to the water rights impairment require the need for additional disturbance of Public land not specifically included in the Plan of Operations, then the disturbance must be approved by BLM prior to commencing construction.
- 4) Sediment-laden or otherwise degraded surface or ground water exceeding Oregon State water quality standards shall not be allowed to discharge to Willow Creek.
- 5) The extent of shiny, light-reflective structural materials shall be kept to a minimum. All structural facilities shall be painted in accordance with BLM specifications. Structural facilities and cleared areas shall be designed, constructed and placed so as to preclude and/or minimize their visual presence as viewed from the Willow Creek and Shasta Gulch Roads as much as possible.
- 6) Safety/security lighting would be focused and limited to minimize night glare to the surrounding area.
- 7) The Operator shall coordinate with Malheur County Road Department to insure that public road access to the site is maintained in a condition similar to that which existed prior to commencement of operations.
- 8) Dust abatement/suppression measures shall be taken during periods of extreme dust generation and as otherwise determined by the authorized officer. Surfactants used for dust abatement must be of such a nature as not to prevent or interfere with vegetation re-growth and must not adversely affect water quality. Their use must be approved by the authorized officer.





## 6. Unavoidable Adverse Effects

- a) Access to the Project area by employees and delivery vehicles would likely require additional maintenance to the Indian Creek and Willow Creek improved dirt/gravel roads. There would be sporadic periods of increased dust due to employee transportation vehicles, two times per day, and periodic supply deliveries. No heavy haulage on public roads of ore or waste rock would occur as part of the project.
- b) The ephemeral stream channels and some riparian vegetation would be eliminated by the Proposed Action. Completion of reclamation would result in a smoothed topographic profile of the drainages and gulch slopes. The existing, historic mining disturbances would also be reclaimed removing the cobble piles, trenches, water ditches, and bank cuts. Although riparian areas would be avoided, where possible, some hydrologic impacts may occur. It is anticipated that engineered hydraulic barriers would prevent long-term impacts to alluvial water flow and riparian habitat.

## 7. Relationship of Short-Term Uses and Long-Term Productivity

The short-term uses in the vicinity have been described above in detail, but in short, the uses consist of wildlife habitat, grazing, recreation, and mining. Additionally, the area has historic significance as middle to late 1800's pioneers homesteaded the land to create ranches that supported and coexisted with the placer miners of the late 1800's. The Eldorado Ditch brought water to the area for the historic placer mining and portions of the ditch are still used for limited water conveyance. In the 1950's, range fire swept through the area effectively destroying all vegetation and the remains of Eldorado, Malheur City and some of the lesser known Chinese labor encampments.

The long-term productivity of the land should not be impaired by this action. The ridges in the Project area would have minimal impact by one or two connector roads. Vegetation on the ridges should not be disturbed by this action. Concurrent reclamation with the designated seed mixture would allow vegetation to become reestablished on the re-contoured side slopes and gulch bottoms. As the vegetation grows, any displaced wildlife species would return to the gulches and resume normal travel routines. Alluvial water flow in the gulches would return to near-normal conditions once sediment is naturally sorted and compacted by periodic precipitation events. Riparian habitat should remain intact.

## 8. Irreversible and Irretrievable Commitments of Resources

Gravel and sand displaced and moved by this action would never return to its original depositional environment. However, the current depositional environment is not inherently natural due to historic mining activity. The gold extracted by the Proposed action would be used for the benefit of the Proponent, potential investors and the private land owner and would never

be returned to the Project area. It is estimated that vegetation in the gulches would require 20 to 30 years to return to the height and density currently present.

The ability of the land in the Malheur City allotment to sustain current levels of grazing activity would be reduced until vegetation is established.

## **V. CONSULTATION AND COORDINATION**

The following is a list of individuals responsible for preparing the EA:

Eric Mayes – Planning & Environmental Coordinator  
Jonathan Westfall – Geology and Minerals, Lead preparer  
Diane Pritchard – Cultural and Paleontological Resources  
Shaney Rockefeller – Hydrology/Riparian, Soils and Air Quality  
Michelle Caviness – Wildlife; Special Status Species  
Gillian Wigglesworth – Botany, Special Status Species  
Garth Ross – Fisheries, Special Status Species  
Lynn Silva – Noxious Weeds  
Garth Ross – Range Management  
Vern Pritchard – Engineering  
Susie Manezes – Realty Specialist  
Michael K. Williams – Hazardous Materials  
David Draheim – Recreation and Visual Resources

Consultation regarding the DOGAMI Mining Permit:

Vaughn Balzer  
Department of Geology and Mineral Industries  
Mined Land Reclamation  
333 Broadalbin  
Albany, Oregon 97706

## VI. REFERENCES

BLM, 1979, Northern Malheur Management Framework Plan, Bureau of Land Management, Vale District Office, Vale, OR

BLM, 2002, Southeast Oregon Resource Management Plan and Record of Decision. Bureau of Land Management, Vale District Office, Vale, OR

BLM, 1992, BLM Manual Handbook 3042-1. Bureau of Land Management, Solid Minerals Reclamation Handbook, 104pp.

BLM, 2008, National Environmental Policy Act Handbook, BLM Handbook H-1790-1, January, 2008, Bureau of Land Management.

Brimlow, George F., The Bannock Indian War of 1878. Caldwell, Idaho: Caxton Printers.

Fowler, Catherine and S. Liljebleed, 1986, Northern Paiute In Great Basin edited by Warren L. D'Azevedo, pp.435-465. Handbook of North American Indians, Volume 11 William G. Sturtevant, general editor. Smithsonian Institution, Washington.

Gregg, Jacob Ray, 1950, Pioneer Days in Malheur County, p. 443.

NOAA 2005. National Oceanic & Atmospheric Administration, U.S. Department of Commerce. Climate information available on the internet at <http://www.noaa.gov>.

SRK, 2005. Malheur Queen Placer Project Plan of Operations and Reclamation Plan; prepared for Ironside Mining Company, L.L.C. by SRK Consulting, Elko, Nevada, 77 pgs.

USDA 1994. USDA Soil Conservation Service (SCS), USDI Bureau of Land Management, and National Cooperative Soil Survey.

USEPA 2005. U. S. Environmental Protection Agency. Region 10 Air Program information available on the internet at <http://epa.gov/region10/AIRPAGE.NSF/webpage/Air+Quality>.

Walker, George W., and MacLeod, Norman S, 1991, Explanation for the Geologic Map of Oregon, United States Geological Survey.

Whiting, Beatrice Blyth, 1950, Paiute Sorcery. Viking Fund Publications in Anthropology 15. New York.

WRCC, 2009. Western Regional Climate Center. Ironside, Oregon. Period of Record Monthly Climate Summary data available on the internet at <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?oriron>.

<http://www.answers.com/topic/malheur-county-oregon>

<http://ceq.eh.doe.gov/nepa/regs/ceq/1508.htm#1508.13>

<http://www.usbr.gov/dataweb/html/pnvalwatdata.html>

<http://www.usbr.gov/pn/agrimet/webarcread.html>



## **VII. Finding of No Significant Impact (FONSI)**

### **BACKGROUND**

The FONSI is a document that explains the reasons why an action will not have a significant effect on the human environment and why, therefore, an EIS will not be required (40 CFR 1508.13). This FONSI is a stand-alone document but is attached to the Environmental Assessment (EA) and incorporates the EA by reference. The FONSI does not constitute the authorizing document: the decision record is the authorizing document.

### **Significance**

“Significance” as used in NEPA requires considerations of both context and intensity (40 CFR 1508.27).

### **Context**

For context, significance varies with the setting of the proposed action. For instance, for a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. For this proposed action, the effects are confined to the immediate area within the Shasta Gulch and Willow Creek drainages in northern Malheur County near Malheur City, Oregon. For this reason, the analysis of effects is in the context of these drainages and the CESA as defined in the EA. These effects are described and analyzed in the EA.

### **Intensity**

Intensity refers to the severity of effect. The proposed action would adhere to best management practices, stipulations, and mitigation that would prevent undue and unnecessary degradation of public land.

The proposed action is to use conventional placer mining techniques to excavate gold-bearing gravel- and sand-sized alluvial material over a period of 7 to 9 years from five gulches in the vicinity of Malheur City, Malheur County, Oregon. The alluvial material would be excavated, sized, washed and the free-gold particulate would be removed prior to the un-mineralized gravels being deposited back into the area of excavation.

The Malheur Queen Placer Project area has not been determined to possess wilderness characteristics. The contiguous BLM land parcel is 1,191 acres of which approximately 206 acres have been disturbed by historic mining activity. BLM has evaluated this area and has determined no long-term impacts will occur by the proposed action.

## **FINDING OF NO SIGNIFICANT IMPACT**

Under the Proposed Action, there would be temporary changes to topography; land use; plants, wildlife, and associated habitat; air quality; esthetics and hydrology during mining. Short-term or temporary socioeconomic impacts are anticipated as well. Impacts to public lands are predicted to be initially adverse and diminish to low over the life of the mine period (7 to 9 years) and the final bond release period (12 years). In addition, some permanent or long-term changes would occur including alteration of the geologic strata, increased infiltration rates through the backfilled placer material, and post-mining vegetative cover. The gulches have experienced historic mining

disturbance involving approximately 206 acres. BLM predicts that proper implementation of the proposed operating stipulations, mitigation measures, and reclamation plan, would prevent or minimize any long-term adverse effects that may occur from the permanent changes. The uneven topography remaining from the historic mining activity would be contoured more evenly and eliminate the abrupt historic placer ridges and trenches. Wildlife habitat would be temporarily eliminated within the areas disturbed by placer operations (approximately 192 acres), resulting in displacement of the more mobile species and some direct mortality of slow-moving terrestrial species. However, concurrent site reclamation, including establishment of native grasses and shrubs could result in enhanced wildlife habitat, providing opportunity for any displaced species to re-inhabit the area.

I find that the project's affected region is localized and the effects of implementation are relevant to compliance with Federal and Oregon State law. There would be no adverse societal or regional impacts and no significant adverse impacts to the environment. I have evaluated the environmental effects, together with the proposed mitigating measures, against the tests of significance found at 40 CFR 1508.27. Although not a condition of my determination, implementation of all operating stipulations and mitigation measures identified in Section C of the EA would be critical to the success of the action.

Any land management action involving ground disturbance invariably, and by definition, entails environmental effects. I have determined, based upon the analysis of environmental impacts contained in the referenced EA (OR-030-08-006), that the potential impacts resulting from the proposed action would not be significant and that, therefore, preparation of an environmental impact statement is not required.

I have determined that if the decision were made to implement the proposed action:

1. The proposed action would cause no significant impacts, either beneficial or adverse; all impacts would be insignificant; and the proposed activity will not have an adverse effect on water quality.
2. The proposed action would have no adverse effect on public health or safety.
3. The proposed action would not affect unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, or ecologically critical areas.
4. The proposed action would have no highly controversial effects.
5. The proposed action would have no uncertain effects and would not involve unique or unknown risks.
6. The proposed action is not related to any immediate action being considered by BLM.
7. The proposed action would have no adverse effect to any property listed on or potentially eligible for listing on the National Register of Historic Places.
8. The proposed action would not significantly adversely affect an endangered or threatened species or any habitat critical to an endangered or threatened species because BMPs would be utilized.
9. The proposed action does not violate any law or requirement imposed for the



- protection of the environment.
10. The proposed action would not significantly affect air quality.
  11. The proposed action would not significantly adversely affect permitted livestock grazing.
  12. The proposed action would not adversely affect wild horses or wildlife because adequate sources of forage and water will remain available.

The proposed action is consistent with the Southern Malheur Management Framework Plan (1983), the Southeastern Oregon Resource Management Plan/Final Environmental Impact Statement (2001) and Oregon State law.

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Pat Ryan  
Field Manager  
Malheur Resource Area

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Date